

DECEMBER 1925 ~ No 239

Monthly

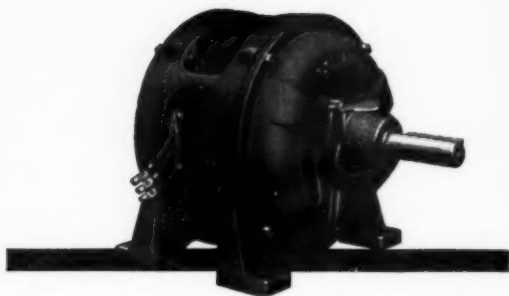
A Reference for P

BOOK

Distributed Free to Machine Tool
Users Everywhere in the United States and to
Dealers in American Machinery Abroad

Published by
A.H. HITCHCOCK
1220-1235 Caxton Building
Chicago

FOR INDEXES SEE LAST PAGES



Reliance Induction Motors are simple, dependable power units that give you the power and continuous operation that mean maximum output with the minimum of interruptions.

Bulletin 5018 gives detailed evidence

Reliance Electric & Engineering Co.
1050 Ivanhoe Road, Cleveland, Ohio

Branches:

BOSTON
NEW YORK

PHILADELPHIA
PITTSBURGH

CHICAGO
DETROIT

CINCINNATI
BIRMINGHAM, ALA.

We specialize in motors, sizes 1/2 to 200 h. p. constant and adjustable speed D. C.; squirrel cage and slip ring A. C.

Type A.A. RELIANCE
Induction Motors



Association, Mechanical Division, June 11-18, 1924, Cle-Forge High Speed Drills established a new world's drilling record — beating their own record set up in 1923.

This booklet gives a complete summary of the Atlantic City tests and is a valuable guide to the shopman interested in finding out just what high speed drills can and will do.

A copy will be sent you—gladly and without charge—for the asking

The CLEVELAND TWIST DRILL COMPANY
CLEVELAND
 NEW YORK · CHICAGO · LONDON

TRADE MARK REG. U. S. PAT. OFF. AND FOREIGN COUNTRIES

Manufacturers, also, of

Carbon and High Speed Drills for every purpose; "Mezzo" Super-Carbon Drills; Hand, Jobbers' and Shell Reamers; "Peerless" High Speed Reamers; "Paradox" Adjustable Reamers; "Quick-Set" Reamers; Chucking Reamers for Turret Lathes; Counterbores; Countersinks; Sockets; End Mills; and the "Ezy-Out" Screw Extractors.

CLE◆FORGE

TRADE MARK REG. U.S. PAT. OFF.

20" Coneless Lathe

Features that cut cost

Twelve Main Spindle Speeds—absolutely selective—with thirteen gears that are always in mesh.

Lathe Spindle Control by means of a lever at the right-hand end of apron—with an auxiliary lever on same controller at end of headstock.

Tailstock of the cutaway type, which permits swivelling of compound rest parallel with the shears.

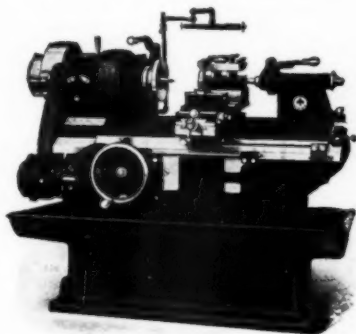
Double Plate Apron with the mechanism so arranged that longitudinal and cross feeds cannot be engaged when screw-cutting.

Gear Box entirely enclosed, with steel gears throughout.

Send for full particulars—sizes 18" to 36"

THE
Boye & Emmes Machine Tool Co.
2245 Spring Grove Ave.
CINCINNATI, OHIO

The LeBLOND Multi-Cut Lathe



LeBlond No. 9 Multi-Cut Lathe

The Multi-Cut is a semi-automatic lathe adapted to combined turning and facing cuts using multiple tools. The set-up is very simple and quickly accomplished, there being no cams to consider. The machine can therefore be used profitably on relatively small lots.

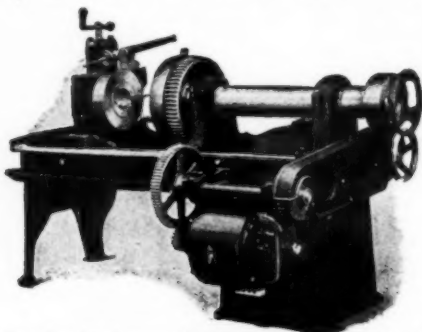
*Our complete catalog describes the several sizes in detail.
We will gladly send it to interested parties.*

**THE R. K. LeBLOND MACHINE
TOOL COMPANY**

CINCINNATI,

OHIO

Why Do B&K Machines Excel?



No. 3 Peerless Improved. Motor Drive. Cap. $\frac{1}{4}$ " to 3".

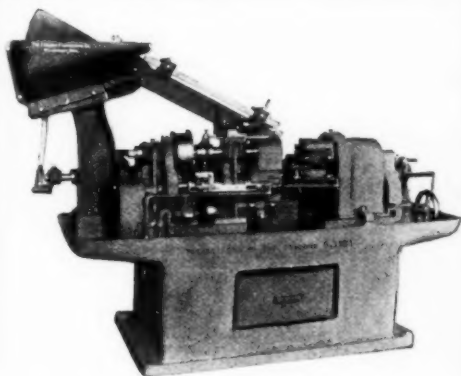
Kindly note the following—

1. B & Ks embody the general excellence of fifty years' manufacturing experience. We have profited by the many severe tests given them under all sorts of conditions, in shops of all sizes.
2. All our machines are equipped with a gear box drive for obtaining the proper threading speeds. This eliminates all uncertainty or guess work in selecting the correct speed for threading any size of pipe.
3. Dies can be changed without removing a screw, and when the die is removed, the die slot can be cleaned without the bother of removing the cover.
4. A rotary oil pump supplies oil to both the dies and cutting-off tool. The pump is gear driven, not with belt—which soon becomes oil soaked.
5. Cutting-off tool is of high speed steel, requiring no reforging. A reaming attachment removes the burr.

Write us your needs and our production engineers will recommend the machine best suited to your requirements

SEVENTEEN STYLES AND SIZES

Bignall & Keeler Machine Works
EDWARDSVILLE, ILL.



**Modern Bolt Manufacturing
Requires**

**ECONOMY AUTOMATIC
COMBINED POINTING
AND
THREADING MACHINES**

Range $\frac{1}{4}$ "x1" to $\frac{3}{4}$ "x5 $\frac{1}{2}$ " bolt and cap screws

**The
Economy Engineering Company
WILLOUGHBY, OHIO**



Threading at 3000 R. P. M.

These rods are being threaded with a No. 8-32 thread 5-16" long, at an average production of 1400 pieces per hour on our Standard High Speed Tapping Machine.

How about your threaded work?

Leland-Gifford Co.
Worcester, Mass., U. S. A.

BRANCH OFFICES:

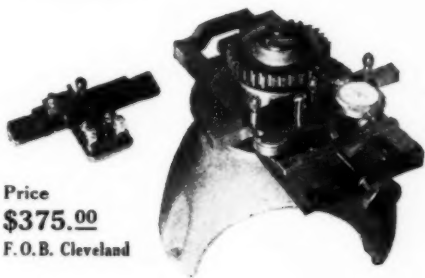
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Cleveland

Chicago
Detroit

New York
Rochester



Test your Gears



Price
\$375.00
F. O. B. Cleveland

Engineers and Shopmen

will find some very interesting reading in Booklet H41, telling how to take the *guess* and the headaches out of "gear troubles". . . .

Measure *your* tooth spacing and tooth form within .0001" as it is done in Automotive Plants.

Send for Booklet H41

LEES-BRADNER CO.
CLEVELAND, O.
U. S. A.

FOOTBURT



A Single Spindle Footburt Sipp Sensitive Drill

**Made in three
sizes of single
and multiple
spindle models**

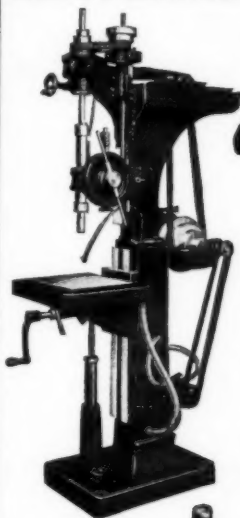
More holes with this machine

Why? Because you can change speeds in two seconds or belts in ten seconds—because the automatic idlers keep the belt pulling to capacity at all times—because the full ball bearing equipment and accurate machining gives a smooth, fast cut.

Write for No. 650 Folders

The Foote-Burt Company, Cleveland, O.

FOOTBURT



DO YOU KNOW

THE

Avey-matic

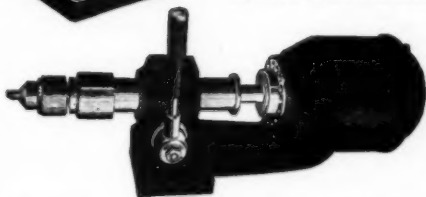
can be operated

**FULL AUTOMATIC
SEMI AUTOMATIC
or HAND FEED ?**

In the full automatic all movements of the spindle are continuous, operator only changing the work.

In the semi-automatic, the feed trips, returns the spindle but the feed is re-engaged by hand.

The feed can always be disengaged at any point of the stroke or advanced ahead of the feed by means of the hand lever.



Three Sizes of Motor Drilling Units

CAPACITIES $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ " in C. I.

Can be attached to tables of regular AVEY machines for side hole drilling while regular operation is being performed. - - - Can be mounted in any position.

GET OUR CATALOG OF LATEST DRILLING PRACTICE

THE AVEY DRILLING MACHINE CO., - CINCINNATI

Cutter and Tool Grinders

For All Classes of Work

No. 12
Cutter and Tool
Grinder



The Nos. 10, 11 and 12 give a range of sizes that will take care of any kind of cutter and tool work as well as light cylindrical grinding.

Let us recommend the proper sizes for your work

LANDIS TOOL COMPANY
Waynesboro, Pa.

New York Office: 39 Church Street Detroit Office: 5928 Second Blvd.
Chicago Office: 618 W. Washington Blvd.



Motor Driven Machine with Guards in Place

Grand Rapids Universal Cutter and Tool Grinders Embody—

CONVENIENCE OF OPERATION, a detail which appeals to all users of Universal Cutter and Tool Grinders. On Grand Rapids machines sleeves, knee, saddle, sub-table, and table can be swung around the column and the knee swiveled on the column. Cross feed, longitudinal feed, and vertical movement can be operated from either in front of the machine or at the rear of the machine. Both hand wheel and lever action are provided for longitudinal feed.

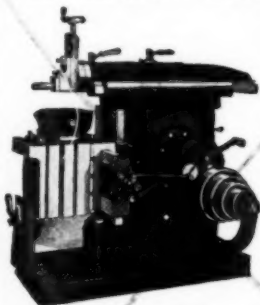
BULLETIN ON REQUEST

Gallmeyer & Livingston Company

342 Straight Ave., S. W.

GRAND RAPIDS, MICHIGAN, U. S. A.

*The name—***STEPTOE**



stands for high grade workmanship. It is backed by a firm that has had more than 80 years of experience in the manufacture of Machine Tools.

Our Line comprises

Shapers

Lathes

Milling Machines

Die Slotters

and

**Portable Electric
Screw Driver**

*Catalog sent upon
request*

THE JOHN STEPTOE COMPANY
CINCINNATI, OHIO

Gear Cutting
Special Machinery
Machine Work of All Kinds

Let Us Figure With You

The John Steptoe Company

2961 Colerain Avenue

CINCINNATI, OHIO



**SMALL in SIZE and PRICE
BIG in ECONOMY and ACCURACY**



The Rhodes Shaper and Slotter

is a reproduction of the larger high-grade shapers in everything but size and price. It is ideal for the tool room, and highly productive, economical and accurate for all shaping and slotting within its capacity. Furnished separate in both the floor and bench type, and in combination in the floor type only.

*Ask your dealer or write for
CATALOG H22*

The Rhodes Mfg. Company

984 Park Road,

Hartford, Conn.

SHAPERS—RHODES—SLOTTERS



*Write for details
on our new*

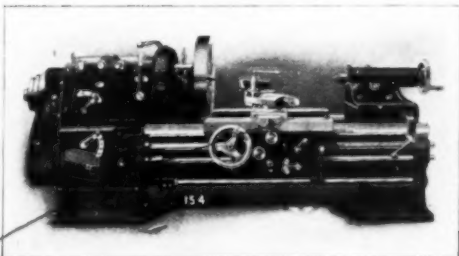
Gold Seal Lathes

\$790

**15'x6'
Geared
Head
Lathe,
Single
Friction
Pulley
Drive,
without
Motor.**

The Sebastian Lathe Company
1000 Culvert St., Cincinnati, O., U. S. A.

CINCINNATI LATHES



Are furnished with standard or special fixtures to do your particular jobs most economically. Specialized over twenty years on lathes. Sizes 16" to 30" inclusive, cone or geared head, belt or motor drive. Get our time estimates on your work. Comparisons will show you why our lathes are so popular.

The Cincinnati Lathe & Tool Co., North St., Cincinnati, O.

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**SEND
FOR IT
TODAY**

B. C. Ames Co.
Waltham, Mass.

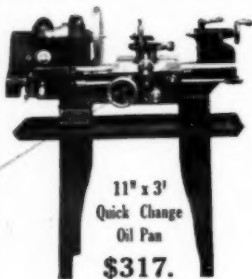
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BENCH LATHE AT WORK**

NAME

ADDRESS

H12

Monarch Jr. Lathes



are the smallest members of the Monarch lathe family. Yet they are the "biggest little lathes" built.

The Monarch line of lathes includes all sizes and types from the little 9-inch Junior lathe to the big, massive 30-in. lathe. In this line there is a lathe to fill your requirements at the price you want to pay.

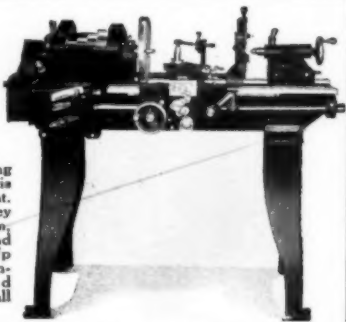
Send for Catalog

The Monarch Machine Tool Co.

206 Oak Street, Sidney, Ohio

The Heaviest Lathe

—of this swing built today is shown at the right. It is the Sidney Medium Pattern, all geared head 11"x4" lathe. Up to the minute conveniences and features are all built in.



Send for our catalog on this and other Sidney Lathes. Address Dept. 1812



The Sidney Machine Tool Co.
Sidney, Ohio

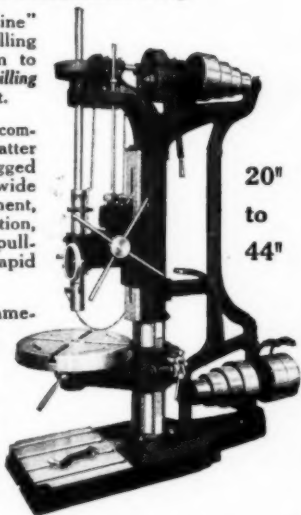
Aurora Sliding Head Drills

With Back Gear, Geared Feed
And Automatic Stop

In the "Aurora Line" of Upright Drilling Machines we aim to sell the most *drilling results* for the cost.

We invite careful comparison in the matter of *quality* in rugged construction, wide range of adjustment, ease of manipulation, accuracy, heavy pulling power and rapid production.

Large pulley diameters and the ratio of gearing used deliver the most power at the drill point. The fool-proof table prevents inaccurate work when a careless operator forgets to clamp it.



Other features are enclosed positive gears, automatic release worm wheel and patented tapping attachment. Made in sizes 20, 21, 22, 24, 26, 28, 32, 36, 40 and 44-inch. Belt or motor drive.

May we send description and bid on your needs?

The Aurora Tool Works

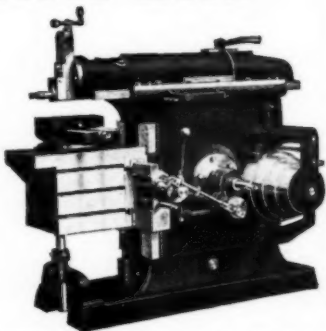
DIVISION THE OESTERLEIN MACHINE CO.
3303 Colerain Ave., Cincinnati, Ohio

SHAPERS

12", 14", 16"
Plain Crank.
16", 20", 25"
B. G. Crank,
either Cone
Driven or
through Speed
Box.

Belt Shifter
Regular Equip-
ment All Cone
Driven Shapers.

32" Back Gear-
ed Crank, Sin-
gle Pulley
Drive.



The Smith & Mills Co., Cincinnati, O., U.S.A.

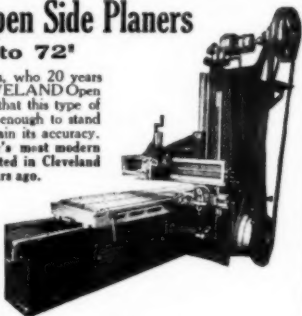
Cleveland Open Side Planers

26' to 72'

Engineers and mechanics, who 20 years ago saw the early CLEVELAND Open Side Planers, doubted that this type of machine would be rigid enough to stand hard usage and still retain its accuracy. Many features of today's most modern machines were incorporated in Cleveland Open Side Planers 25 years ago.

Over 1060 installations to date.

Box Tables; Closed Top Beds; Self Oiling Bushings throughout Drive; Counterbalanced Side Heads.



Over 1060 installations. Send for descriptive circular.

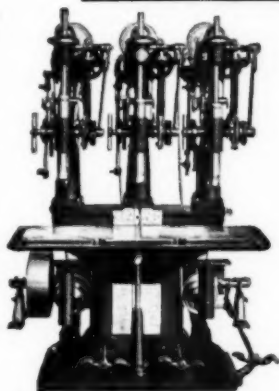
The Cleveland Planer Co.,

3148 Superior Avenue,
CLEVELAND, OHIO

Established in 1900

To See the Rockford Drill

Is to Appreciate Its Value



**You Are
Assured**

of a

**Large
Output,**

**Dependable
Accuracy**

and

**Lowest
Shop Costs**

The Rockford Automatic Gang Drilling Machine makes good wherever installed—let it increase your profits. Built with 2, 3, 4 and 6 spindles, box column type. We will gladly mail you the circular and answer questions.

***Automatic Return**—When each spindle has completed its operation it automatically returns to its highest position, where it remains until the starting lever is tripped, when it immediately drops to position above the work.*

***By Removal** of the stop pin in the cam, the spindle will immediately return to lowest position above work, and when tripped by automatic stop, will return to highest position and immediately drop again to work, repeating the movement automatically until the power is shut off. The spindle can be pulled ahead of the feed while in operation, a great advantage in drilling through a cored piece, piping or similar work.*

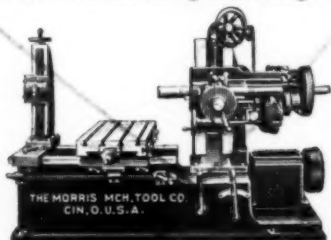
Rockford Drilling Machine Co.
ROCKFORD, ILLINOIS

Collets made by **HARDINGE BROTHERS' Inc.**, are being imitated every day, but the guarantee that has behind it the reputation for square dealing and quality of workmanship and material borne by this well known firm only goes with the goods stamped "**HARDINGE**"

Write for Catalogue and prices

Hardinge Brothers, Inc.
4149 E. Ravenswood Ave., Chicago, Ill.

You will find plenty of use for a
Morris Horizontal Drilling and Boring Machine



It will make money for you on jobbing work, in the tool room or on production work. Micrometer adjustments on the head, table and bar support, and it is built to hold its accuracy.

Our circular will tell you more about it, and the price is right

The Morris Machine Tool Co., Cincinnati, Ohio

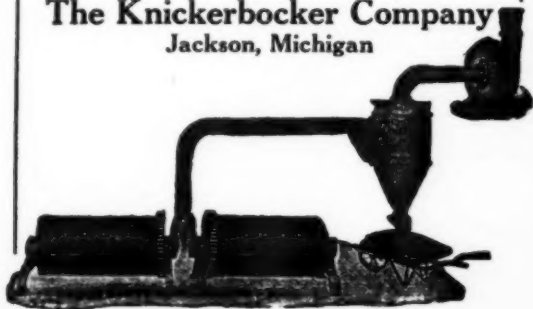


**Knickerbocker asks you to
note that the "Rarefied"
Dust Collectors have these
Ten Points of superiority:**

1. The suction never varies.
2. They collect *all* the dust heavier than air.
3. The material collected is discharged *automatically*.
4. There is no cleaning out by hand.
5. There is no filling up of cloth or screens.
6. There are no moving parts.
7. There is no cutting out of fan.
8. The inner separating walls are interchangeable.
9. There is no undue wear on Collector parts.
10. The cost of repairs is very low.

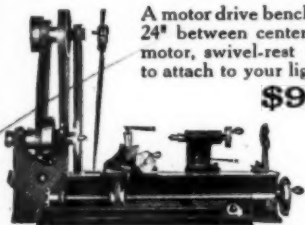
*Their superiority has made them favorites in many
big plants. Write for Booklet and list of users*

The Knickerbocker Company
Jackson, Michigan



Just-Rite Lathes

Made in Sizes from 10-in. to 20-in.



A motor drive bench lathe, 10" swing, 24" between centers, complete with motor, swivel-rest and pan, ready to attach to your light socket.

\$98

JUST-RITE
for turning,
boring, mill-
ing and drill-
ing (not screw
cutting).

Order one by express. Weight, 230 lbs.

A. V. Carroll Machine Tool Co., Norwood, Cincinnati, O.

100 Cents Worth of Value per Dollar!

The "ARTISAN" 11" Lathe unquestionably represents the greatest value obtainable in a small Lathe.

It sells for \$188.00 f. o. b. cars, Cincinnati, and this unusually low price is possible **only** because it is manufactured, on a quantity production basis, in **one size** and in **one style**.

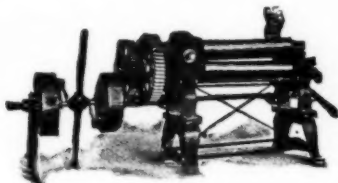
Its design is just a step ahead; its construction insures permanent alignment; its accuracy, workmanship, material and finish will compare favorably with any standard 11" Lathe.

Since 1922, more than 500 machines have been placed with satisfied customers whose unsolicited words of praise back up every claim that we make.

Don't buy a Lathe until you investigate our proposition.

A post-card brings full particulars. **WRITE TODAY**

Artisan Manufacturing Company
Station "N", CINCINNATI, OHIO



BELOIT

INITIAL TYPE

Sheet & Plate Bending Rolls

The Beloit Initial Type Rolls are built in a large number of sizes and capacities, and for a great variety of work.

The modern design of the Beloit Rolls of this type makes it possible for the operator to curve plates completely to the edge, thus getting away from the undesirable flat near the edge of the sheet.

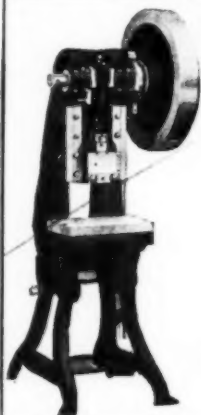
The quick-acting cam lever device raises the top roll for the removal of completed cylinders.

Individual and simultaneous adjustment of both ends of the forming roll can be furnished, and the machine can be arranged for third roll drive, when necessary.

Those in the market for Bending Rolls cannot afford to fail to give us their specifications, and to get our quotations.

We solicit your inquiries for Bending Rolls, either Initial Type as shown above, or the Pyramid Type machine, as well as for Punching and Shearing Machinery, both hand and power.

Hendley & Whittemore Co.
100 S. State St., **BELOIT, WIS.**



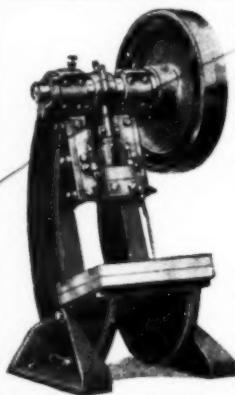
Husky, Powerful

speedy Punch Presses
deliberately designed
for High Production
work.

All Types and Sizes

Write for Catalog

Rockford Iron Works
Rockford, Ill.



Trade **Verson** Mark

Punch Presses

For Accurate Work

Ask your dealer
to show you the
"Verson" Line of
Power Presses,
or write direct for
circulars.

**La Salle
Machine Works**

3013 S. La Salle St., Chicago, Ill.

Manufacturers of Power Presses, Angle Shears and Dies

Treatise on Die Sets!

**It Is
FREE**

**Send for
YOUR
Copy**



No plant producing stampings is fully equipped unless the new Danly 34-page catalogue, third edition, is in use by design-

ing engineers, drafting office, tool-room superintendent and purchasing agent. More than 7,000 copies of this treatise—the most complete and comprehensive ever published—are in use. It is a standard reference book for some 3,000 nationally known concerns who have standardized upon Danly Die Sets.

You can choose any one of the 12 types and 97 sizes, either completely assembled or in the "knock down," in a few minutes. Order by type and number—at a saving of 20 to 50%, without bother, delay or mistake.

Danly Machine Specialties, Inc.

4913 Lincoln Ave., CHICAGO

DETROIT, MICHIGAN
1537 Temple Avenue



LONG ISLAND CITY, N.Y.
35 Wilbur Avenue



T. H. L. Punches

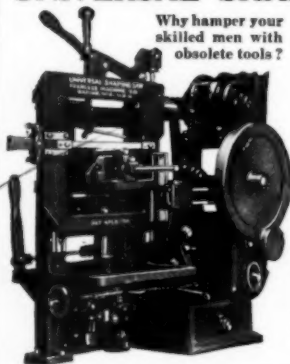
Are Correct
— in —
Every Detail

The material is right and they are made right. Our experience of 35 years is behind every one of them, insuring the most profitable and satisfactory service. Try them out, and you'll come again.

*Large stock of regular sizes
Special sizes quickly made*

T. H. Lewthwaite Machine Co.
417 East 31st St., (Est. 1890) New York City

—PEERLESS— UNIVERSAL SHAPING SAW



Why hamper your
skilled men with
obsolete tools?

Different Principles
Greater Efficiency

Give The Most Of—
Speed
Accuracy
Blade Economy

SIZES:
6"x6"--9"x9"--13"x13"

PEERLESS
HIGH SPEED HACK-SAWS
6"x6" 9"x9" 13"x16"
Sturdy--Efficient--Reliable

Peerless Machine Co.
1609 Racine St.
Racine, Wisconsin

Write for Details

Spring Press

(UNIFORM BLOW)

Foot or Power

Single and Double Action

These Presses are used in large numbers by manufacturers of electrical devices, jewelry, cutlery, hardware, clocks, radio sets, toys, instruments, etc.

The Uniform Blow a special feature — increases production and eliminates costly inspection.

The Taylor & Fenn Co.

Hartford, Connecticut, U. S. A.

SOMETHING NEW



**Hand Power Presses, Shears, Notchers,
Punches and Dies, Etc.**

Write for Booklet

J.F. Kidder Mfg. Co., Burlington, Vt.

*There's a
saving every
time they're used*



It Costs Less To Cut

rounds, squares, flats
and to

Punch Those Holes on "The Bench" No. 3

Combination Shear,
Rod Cutter & Punch

CAPACITY $\frac{5}{8}$ "

\$45⁰⁰ f. o. b. Phila.

THE BENCH MACHINE TOOL CO.

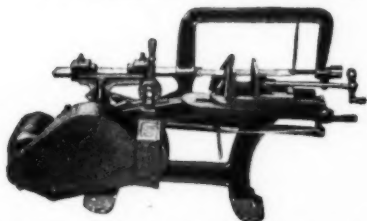
Makers of "THE BENCH" Tapping Machines

222 N. 13th Street,

Philadelphia, Pa.

29

A GENERAL WORK
Motor Driven Hack Saw
Either Stationary or Portable



Marvel Draw-Cut Hack Saw No. 2

CAPACITY { 6"x6" on long stroke
 { 8"x8" on short stroke

Here is a saw that is proving very popular—a motor-driven, substantial, smooth-running, general-purpose Hack Saw of good capacity, that is sold **at a reasonable price.**

It is furnished either with motor for power circuit as a stationary machine, or with motor for an electric light circuit so it may be moved anywhere in the plant, the cord attached to the nearest lamp socket, and it's ready for business.

Motor is connected to driving crankshaft by silent chain, sprockets and intermediate cut gears enclosed in cast iron housing and guard and run in oil.

We can also furnish a smaller Motor Driven Hack Saw, portable, for light circuit, capacity 4"x4". We make other Hack Saws, one of them entirely automatic, and the popular Marvel Metal Band Saw, all furnished either belt or motor drive; also Punches, Shears and Rod Cutters. Tell us your requirements, and let us send you description and price of what you need.

Armstrong-Blum Mfg. Co.
341 N. Francisco Ave., CHICAGO, ILL.



This Free Chart

The Correct Guide in Cutting

Your request on your letterhead will bring this authoritative chart.

RACINE "JUNIOR"

Portable High Speed Metal Cutting Machine, easily moved to any location near electric light socket. Smooth, vibrationless, need not be bolted to floor. Normal capacity 0 to 4".

Use "Racine" H. S. Wood and Metal Band Saw Blades & "Racine" H. S. Tungsten Power and Hand Hack Saw Blades. *Catalog H.*

Racine Tool & Machine Co.

1429 Junction Av., Racine, Wis.
"STANDARD THE WORLD OVER"

Excels All in Cutting—

Hard Steel; Forming Tools; Drills; Reamers; Tubes; Rods and Bars of Copper, Brass and Aluminum; Carbon; Crayon; Metal Covered Wood Rods, Etc.

Peter's Abrasive Metal Saw makes a quick, thin, smooth cut. Doesn't draw the temper, and saves grinding. Soon earns its cost.

8" Size \$22.50, with C. S. Splendid for tool room. Cuts all high-speed steel up to $\frac{3}{8}$ " square.

12" Size \$60, with C. S. Cuts up to $2\frac{1}{4}$ " diameter, round or square, at any angle up to 45 degrees. Ball bearing.

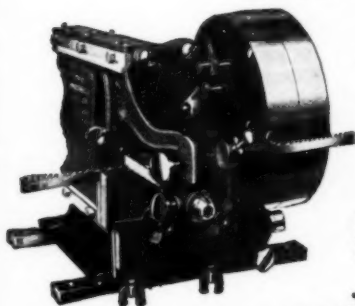
15 Days' Free Trial

Write us or ask your dealer

PETER BROTHERS MFG. CO.
115 Railroad St., Algonquin, Ill.



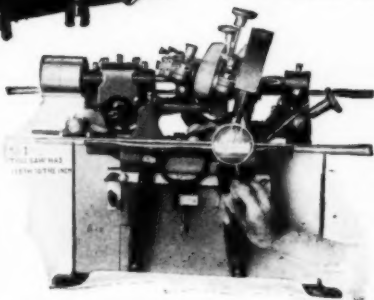
YEARS OF RELIABLE SERVICE



Model K-2
IN ONE
OPERATION
Files and Sets
Medium, Spring
or
Soft Tempered
BAND SAWS

Fisher Body.....have...28
Simonds Saw.....have...22
Gen'l Electric...have...25

Model A-2
Sharpens and
Salvages
HARD
Medium
or Soft
Tempered
BAND
SAWS



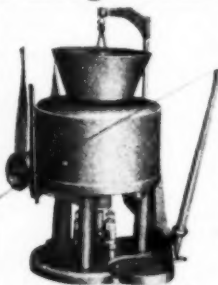
THAT IS WHY

20 concerns each have over 15 of these machines

**CAN YOU SHARPEN A SAW
FOR 5 CENTS? THESE MACHINES WILL**
THE WARDWELL MFG. CO.

Specialty Manufacturers of the largest line of Saw Filers made in the U. S. A.
108 Hamilton Ave., CLEVELAND, OHIO

Salvage Your Money By Saving Your OIL



No. 150—Cap. $\frac{3}{4}$ Bushel

Oil costs money. Therefore, to reclaim oil is to reclaim money.

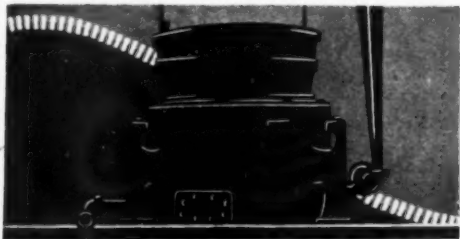
The Curtis Oil Extractor

saves oil—and money—far beyond its cost. In 20 installations the average saving was 2.17 gallons per 100 lbs. of chips.

Made in two sizes, belt or self-contained motor drive. The illustration shows our smaller size, belt driven. Furnished, if desired, with attachment for introducing live steam or liquids.

*It pays amazing profits
Write for Catalog and prices*

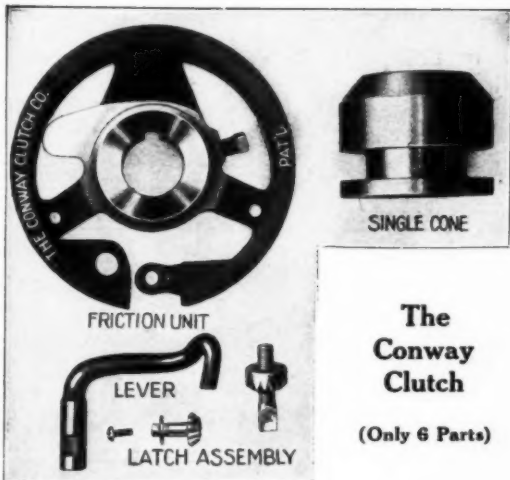
The Leon J. Barrett Co., Worcester, Massachusetts
Successors to Curtis Machine Co.



**Save
Cutting
Oil!**

6 to 15 gallons per load—
three or four loads per
hour. Write for catalog.

Tolhurst Machine Works
Troy, N. Y.



The Conway Clutch

(Only 6 Parts)

Simplicity

The illustration shows the Conway CMT Clutch disassembled. Six parts! Could anything be simpler, stronger, less liable to fail in service?

This analysis indicates its dependability, but not its efficiency, a merit not easily put into words, though the one thing that counts when you buy a clutch.

But the advantage of simplicity, and its bearing upon performance, are easily recognized. The power moves from live to driven shaft directly, and without loss.

There is nothing in these few sturdy parts to get into trouble or to fail in a pinch. They look strong; they are strong; they are efficient, because efficiency is the natural effect of combining simplicity and strength.

It is worth while to know the Conway. Let us tell you more.

The Conway Clutch Company
1951 Riverside, Cincinnati, Ohio

No Smoke

No Fumes



Non-Poisonous

Non-Inflammable

Non-Explosive

KASENIT No. 1
For Fine Work and
Very Rapid
Hardening

Sold in $\frac{1}{2}$ lb., 1 lb.,
3 lb., 5 lb. and
10 lb. tins

KASENIT No. 2
For General
Hardening

Sold in 25 lb. and
50 lb. kegs

ASK YOUR DEALER

KASENIT COMPANY, 2 & 4 Stone Street
NEW YORK, N. Y.



Round



Oval

QUALITY SCREWS

ECONOMY SCREWS are *quality* screws, because they are carefully made of the best material, with heads free from burrs—especially suitable for screw driving machines.

We keep on hand the largest stock in the Western market, and can ship promptly any size of standard screws in iron or brass at any time.

If you cannot secure Economy Screws from your jobber, please write us and send your nearest jobber's name and address.

Economy Screw Corp'n

5213 Ravenswood Ave., Chicago, Ill.



Flat

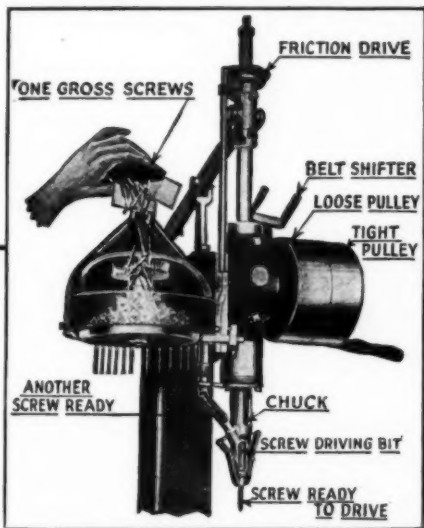


Fillister

Magazine
Feed

Screw Driving

An automatic
time saver



Showing the Magazine Feed of the Reynolds Automatic

It saves all handling of screws—a big time saving. The operator dumps a gross or more of screws into the hopper, uses both hands to move his work into place, and presses a foot lever—that's all. Is it any wonder that a boy or girl drives 800 to 1,200 screws an hour easily and perfectly?

Let us know the dimensions over all of your work and the length and gauge of screws used, and we'll post you on a big saving. Some large users say their Reynolds Automatics pay for themselves every four months.

The Reynolds Machine Company

Dept. H. H.,

Massillon, Ohio

"D & W" Demagnetizers



Built in two separate types, for use on alternating or direct current



Their construction is unique. A rigid continuous "U" shaped core made of the highest grade laminated electrical steel is energized by two stationary coils, thru which alternating current is passed. Construction is similar for d. c. machine, only in addition it contains a small converter. *Write for circular.*

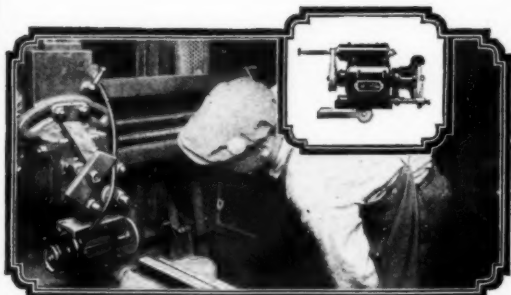
J. & H. Electric Co., Inc., 161 Clifford St., Providence, R. I.



For grinding and polishing metal, wood, fibre, etc., this Belt Grinder quickly secures flat surfaces and straight sharp edges and saves hand filing. Motor driven from lamp socket. Two sizes.

Ask about its novel features.

PORTER-CABLE MACHINE CO., Salina St., SYRACUSE, N.Y.



Helping Willys-Overland Take America Off Its Feet

IN THE Willys-Overland plant at Toledo, Dumore grinders play an important part. How well they fulfill every demand made of them—how accurate and adaptable they are for all varieties of grinding work, is convincingly illustrated in the hood panel forming—die grinding job pictured above. And when you consider that this is but one of many difficult operations successfully handled by Dumore grinders at the Willys-Overland works, you'll agree that these efficient tools assist materially in "taking America off its feet."

It is reasonable to assume that what Dumore grinders can do for Willys-Overland they can do for any other manufacturer. Six distinct styles of Dumore grinders, each with individual speed ranges, provide a grinder with the correct cutting speed for any grinding need. Dynamically balanced armatures and selected ball bearings in Dumore grinder motors eliminate vibration—permitting maintenance of grinding limits as close as .0001, without taper, bell-mouth or chatter marks. Operating on alternating or direct current, they are especially useful in shops supplied with two varieties of power current. Portable, they save the cost of tearing down expensive set-ups.

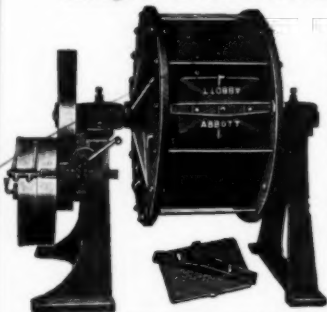
Why not find out what they can do for you? Our new catalog tells an interesting story of Dumore grinders and their uses. By asking for it today you'll get it quicker than by delaying until tomorrow. Write now!

Wisconsin Electric Co., 43 Sixteenth St., Racine, Wis.

DUMORE HIGH SPEED GRINDERS

Quantity Burnishing—

Saving 75% to 99% Over Hand Buffing



Why polish one piece at a time, when the Abbott Barrel and Steel Ball Process puts a brilliant uniform surface on small metal articles in large quantities?

Now equipped with gear guards, belt shifter and strainer cover.

Description and prices?

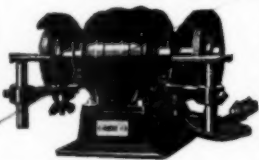
THE ABBOTT BALL COMPANY

Elmwood District,

Hartford, Conn.

Bodine Portable Tool Grinder

Leaves No Excuse for Dull Tools



A one-purpose machine which sharpens tools so easily and perfectly that output is noticeably increased.

Some plants have found it highly profitable to have a "Bodine" in every department, instead of one centrally located grinder.

The "Bodine" is built right, too. It is equipped with SKF ball bearings, heavy wheel guards, tool rests adjustable to any position, a perfect oiling system, etc., etc. And you'll find the price well within your reach.

*Glad to mail you description, with the reasonable price
You may find this just what you've been looking for*

The Bodine Electric Company

2256 West Ohio St., Chicago, Ill.



PEERLESS SURFACING MACHINES

for

*Grinding and
Finishing
FLAT PARTS*

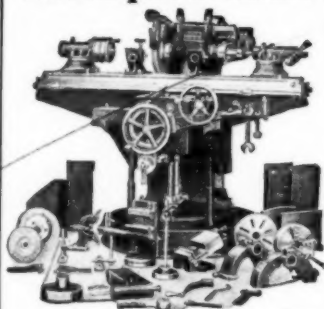
*Take
a
rapid
cut
and
leave
a
perfect,
straight-
grained
finish*

Also made in horizontal models. Write for large folder.

PEERLESS SURFACING MACHINE CO., Inc.
TROY, N. Y.

In Canada: A. R. WILLIAMS MACHINERY CO., Toronto

Thompson 10"x36" Universal Grinder



A high-grade machine for

**Plain,
Surface,
Edge,
Die,
Cutter
and
Internal
Grinding**

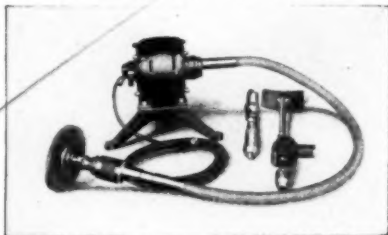
—and good at all of them.

Write for Bulletin

**Manufactured By
THE THOMPSON GRINDER CO., - Springfield, Ohio**

The Whirlwind Buffer and Grinder

Will cut the cost on any unhandy grinding or polishing job



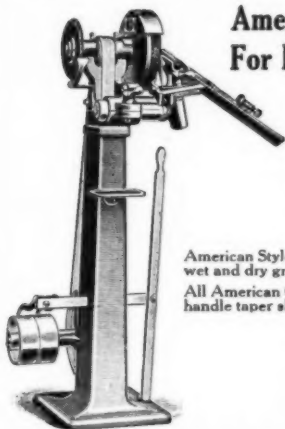
Send for our latest bulletin

**Stow Flexible Shaft Co., 3454 Ludlow St.,
Philadelphia, Pa.**

The Best Since 1876

La Salle Grinders

**American Style C T A
For Dry Grinding Only**



Unexcelled as a dry grinder for twist drills. Extra large drill holder has capacity from 1" to 3½".

American Style W T A is arranged for both wet and dry grinding.

All American Grinders are now equipped to handle taper shank drills.

No. 1 Plain and Surface Grinder

(Micrometer Adjustment)

Grinding wheels.....	8"x1"
Between wheels.....	15"
Height to spindle center.....	40"
Table surface.....	8"x14"

Has vertical travel of 12" on guides, ¾" by micrometer, and may be raised to within 2" of spindle center. Wheel grinds to center of a surface 9" wide.



Let us know your grinding requirements

LaSalle Tool Company

LaSalle, Illinois, U. S. A.

Patented
Jan. 30, 1917



Type 6

Shops and Service Stations.

Now equipped with Belden Rubber Cord
Approved by the Underwriters

Write for descriptive circular

The Cincinnati Specialty Mfg. Co., Inc.
1903 Powers St., Cincinnati, Ohio

New "AUTEX" Extension Reel 1925 Model

Don't Forget the Swivel Joint Feature

Permits of carrying the lamp
in any direction.

Rapidly finding a place in large
Industrial Plants, Machine

The BARKER GENERAL PURPOSE VISE

For Planers, Shapers, Drilling and Milling Machines



Two Sizes

Width of jaws 11½" - 12"
Depth of jaws 2½" - 3"
Jaws open 8" - 12"
Weight 180 - 210 lbs.

Also 16" Mold Makers' Vise

OUR MOLD MAKERS' VISE has 13" width of jaws,
7" depth, and jaws open 16"—weight 290 lbs.

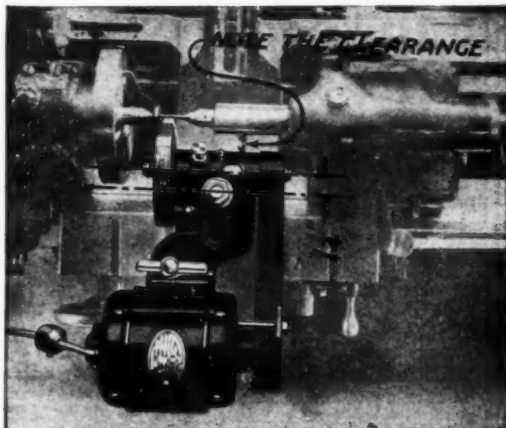
ALL BARKER VISES are made extra heavy, with
steel faced jaws, and are graduated to swivel
any angle. They stand lots of hard usage.

Get in touch with us before buying

WM. BARKER & CO.

Manufacturer of Machine Tools,

COVINGTON, KY.



The Smallest Piece can be Ground Between Centers

The most **Precision Grinder** And it's
Flexible Portable
For Internal and External Grinding

It has the sturdy construction to meet every demand, yet is light enough to be portable and usable on the various machine tools in your plant.

Built on a precision basis, it is particularly valuable where the allowable limits are held inside of tens of thousandths of an inch.

Those who are using this highly developed grinder, find it a most valuable addition to their tool room or machine shop equipment.

Write for our Booklet, which describes many new features and illustrates several operations in internal, external and surface grinding.

Manufactured by

J. E. GILBERT GRINDER CO.

214-16-18 Greenbush St.,

MILWAUKEE, WIS.

SERVICE TOOL DIE & MFG. CO.

2256-58 W. Walnut St.,

CHICAGO, ILLINOIS

Distributors for—ILLINOIS, OHIO, INDIANA, MICHIGAN



Strand Rotary Files

Used with Strand
Flexible Shaft
Machines. Are
giving excellent
results.

Write for Catalog

N. A. Strand & Co.
5001 No. Lincoln St.
CHICAGO

HIGH SPEED HAND CUT ROTARY FILES



Armstrong Tools



Tool Holders

Over 100 shapes and sizes for every operation on Lathe, Planer, Shaper, Slotter, etc.—the only complete line. Better have our Tool Holder Catalog.

Ratchet Drills

For all purposes—"Packer," for rough service; "Standard," for general use; "Weston," extra heavy; "Universal" and "Short Ratchet." Ask for Ratchet Drill Catalog.

Drop Forged Wrenches

All kinds. All sizes. Highest quality. Write for Catalog of Steel Wrenches.

Clamps and Dogs

Drop forged. All shapes and sizes. Highest quality. Alloy steel screws. Separate Catalog.

Armstrong Bros. Tool Co.

"THE TOOL HOLDER PEOPLE"

308 N. Francisco Ave., Chicago

Why Continue The Waste?

The "Good Enough" of Yesterday
HAS BEEN OUTCLASSED
In Methods for Truing Grinding Wheels

The largest factories in the U. S.
are adopting our truing tools and
are saving at least one-half of
their former diamond cost.

You Can Do the Same

Any good mechanic can use these
tools successfully by following the
simple instructions.

The Saving is Worth While

The tools are not an experiment, as
one concern has several hundred
of them in use every day and there
are scores of concerns using them
on their best work.

BETTER—FASTER
and Decidedly Less Cost

Ask us for information

The Precision Truing Machine & Tool Co.
CINCINNATI, OHIO

Anderson **IMPROVED** Ever-Ready **Balancing Ways**

Balance 'most anything that revolves



Extremely sensitive. Discs accurately balanced. Always ready—need no adjustment—no leveling needed—no centers required. Last indefinitely. The hardened spindles hold their accuracy—don't become indented with ordinary use. Six sizes.

Get the folder and close price.

"Swing"	20"	40"	60"	72"	96"	72"
Greatest distance bet. standards..	20"	30"	30"	66"	88"	20"
Capacity in lbs.	1000	2000	2000	5000	10000	24000
Approx. shipping weight.....	45	90	150	350	650	
Code	Ben	B'd	Bis	Bib	Ben	

Any of above can be furnished with longer shafts

Anderson Bros. Mfg. Co.

1915 Kishwaukee St., Rockford, Ill.

For Sure Balance--

an absolutely level and solid "Way" is necessary

Bowsher "Balancing Ways"



are brought to an absolute level in ten seconds. No revolving parts.

The edges or "knives" upon which the work is tested are ground true, and are mounted upon the planed "ways" of a heavy bed or frame.

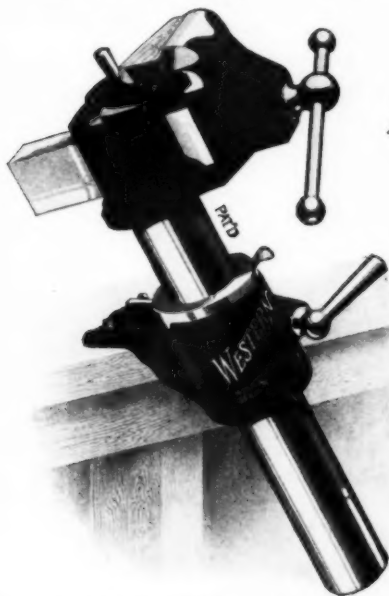
Standards adjustable to suit length of arbor.

Three sizes for floor—one for bench use

Send for Catalog "F"

The N. P. Bowsher Co., South Bend, Ind.

This Vise Pays Real Profits



**The
Western
Adjustable
Vise**

It pays profits, because (1) There is no limit to the number of positions within its range, in either swiveling or elevating; (2) it is the most easily and quickly positioned, and one lever locks all swivels; (3) it does not jump or rattle under chiseling or hammering; (4) it handles odd-shaped pieces with ease; (5) any piece can be reached from all directions, with work in proper position before the eyes; (6) it leaves no excuse for spoiled work on account of not seeing lines; (7) it enables the vise hand to do more work and more accurate work.

Write for Catalog; it also shows other money-makers

The Western Tool & Mfg. Co.
SPRINGFIELD, OHIO

Save Time Setting Gang Milling Cutters

Eliminate
Thin
Washers



Hardened
and
Ground

PATENTED

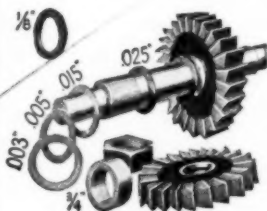
"Wear-Ever" Adjustable Spacing Collars permit setting cutters to the thousandth part of an inch without removing from the arbor.

Stock sizes for $\frac{3}{4}$ " to $2\frac{1}{2}$ " arbors, sent on approval
They are adjustable in 12 steps of $2/1000$ inches

SCULLY-JONES & CO. TOOL DIVISION
13th and Robey Streets CHICAGO, ILL.

Steel Spacing Washers—

Made of a good grade of Cold Rolled
Strip Steel, also known as Shim Steel



Stock sizes for arbors of
following diameters: $\frac{3}{8}$,
 $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$,
 $1\frac{1}{2}$, $1\frac{3}{4}$, $1\frac{7}{8}$, $1\frac{9}{8}$, 2,
 $2\frac{1}{4}$, $2\frac{1}{2}$, 3, $3\frac{1}{2}$ and 4 in.
and larger.

Stock thicknesses: .002,
.003, .004, .005, .006,
.007, .008, .010, .012,
.015, .020, .025, .032,
.047, .063, .093 and
.125 inch.

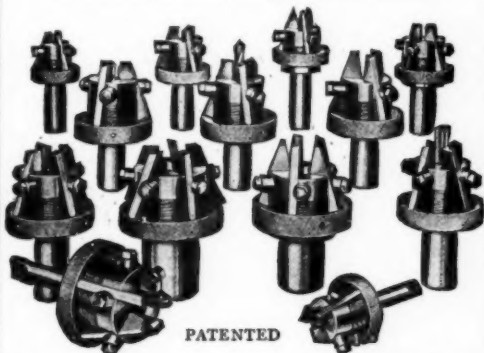
Other thicknesses up to
3.000" made to order, with
keyways if so ordered.

Ask us to send samples; you'll like them

Detroit Stamping Company
3443 West Fort St., Detroit, Mich.

Genesee Hollow Mills

Have Adjustable, Replaceable Blades



Adjustable—One set of blades machines all sizes within their capacity to the 1000th of an inch. Only seven sizes cover the entire range from $\frac{1}{8}$ " to 2".

Replaceable—The blades can be replaced at nominal cost, saving the buying of new tools.

Accurate—Genesee Hollow Mills cannot change in size, even after repeated grindings, as solid tools do, and they are stronger.

Economical—Economical to buy, because one Adjustable Hollow Mill covers several sizes; economical in upkeep, because of replaceable blades; economical in operation, because they cut up to 15" a minute in steel or to the capacity of machine.

Write us of your needs and reduce your costs

Genesee Manufacturing Co., Inc.

Established 1908

Rochester, N. Y., U. S. A.

Manufacturers of Genesee Rapid Production Tools

Thor

Electric Drills —

**Push the Button
and It's Ready**



MEN who use a THOR Portable Electric Drill, tell us that it is exceptionally easy to operate and control. The easy operating push button switch enables the operator to start or stop at will.

The handle is comfortable and gives positive control over the drill.

THOR Drills are built of easy running, rugged parts that insure durability and economy. They are all equipped with a ground wire for safety—shocks are impossible! Jacobs Chucks, ball and roller bearings, double-silk wound coils, and other high grade parts are standard equipment.

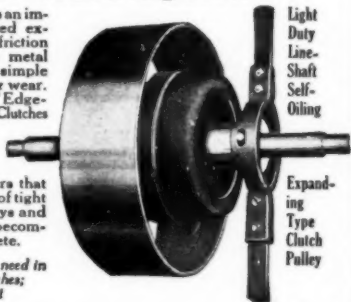
Get a copy of our new, illustrated catalog. It pictures and describes the complete THOR Line. Write for it today.

Independent Pneumatic Tool Co.
600 W. Jackson Blvd., Chicago, Ill.

Edgemont Friction Clutches For All Purposes

This clutch has an improved patented expanding type friction with metal to metal contact, with simple adjustments for wear. The value of "Edgemont" Friction Clutches on line shaft has been so universally acknowledged by mill operators that the old system of tight and loose pulleys and belt shifting is becoming quite obsolete.

*Tell us what you need in
Friction Clutches;
we have it*



Light
Duty
Line-
Shaft
Self-
Oiling

Expanding
Type
Clutch
Pulley

Edgemont Machine Co., Inc., DAYTON, OHIO

The Nicholson Patented
Expanding Mandrels
Are Saving Lots of Money



Strong!

Rigid!

Accurate!

YOU LOSE no valuable time, nor is a job delayed, when a set of Nicholson's Mandrels are available. Compared to these up-to-date tools, solid mandrels are an expensive make-shift.

Nicholson Expanding Mandrels come in sets of nine, with two or three sets of jaws for each. And *one set* will cover the *entire* range between one-half and seven inches, inclusive. In other words, at least one of these mandrels will take absolutely *any* hole, no matter what it is, between these two dimensions, without calipering or guess work, and the nine will replace *all* the solid mandrels.

They are adaptable to work of the most varied nature. They save time and labor out of all proportion to their moderate cost.

*Write today for the instructive Booklet
and our 30-day trial offer*

W. H. Nicholson & Company

117 Oregon Street,

Wilkes-Barre, Pa.

Oh Boys!

Here Is A

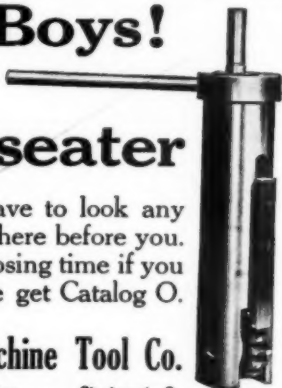
Keyseater

You won't have to look any further. It's here before you. You will be losing time if you don't at once get Catalog O.

National Machine Tool Co.

2268 Spring Grove Ave.,

Cincinnati, O.



Keyseats Shafting In Place

Anywhere, in any position



**The BURR
Portable
Keyseater**

Cuts accurate keyways up to 12" long anywhere in any position, in shafts up to 5" diameter.

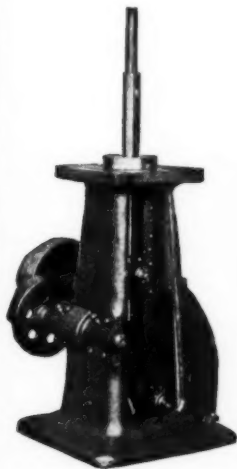
DON'T WAIT until you need it, when you would pay 10 times its cost to have one; **ORDER NOW.**

Over 9,000 in use. Will you be the next?

JOHN T. BURR & SON

422 Kent Ave., Brooklyn, N. Y.

Rapid NEW Catlin Keyseater Makes NEW Low Cost Records



*Favor us with your inquiry.
We shall be glad to mail the
interesting folder and answer
questions.*

*Popular in
Automobile Plants
Government Shops
Navy Yards
and many big
Domestic and
Foreign Factories*

Whether you need one keyseat or a thousand, the rapid "Catlin" will cut them to even better than 1000th of an inch accuracy. And its great speed explains its great economy. It cut a keyseat 6" long, 1" wide and 7/16" deep in a cast steel hub, in 3 minutes; this was in ordinary shop practice, with no attempt made to establish a record.

The picture shows the No. 1 Catlin, belt driven, with three-step cone pulley. Our other sizes, for belt or motor drive, cover practically all keyseating requirements.

Chattanooga Machinery Company

2401 Bennett Ave., Chattanooga, Tenn.



QUICK Action Relief

The Walton Way with Broken Taps

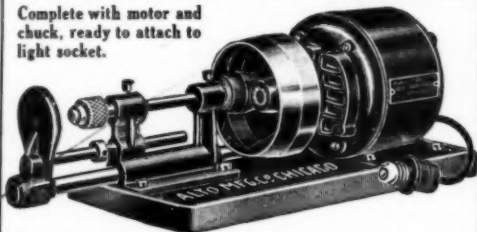
This handy and inexpensive device saves a lot of time and trouble when taps break at or below the surface. You simply insert the fingers of the tool into the flutes of the broken end, give it one or two sharp turns, and you back out the tap without any damage to the work. Sizes No. 8 to 1 1/4".

Let's have your name and address and we'll send you a Walton on trial

The Walton Company
Hartford, Conn.

No. 1 Alto Motor Driven, High Speed Tapping Machine

Complete with motor and chuck, ready to attach to light socket.



This efficient high speed tapping machine, with three times faster reverse, is *just what you want*. It is thoroughly well built, but so simple and compact in construction that we can offer it at a *low price*. Capacity, 3/16" in brass, 1/8" in steel.

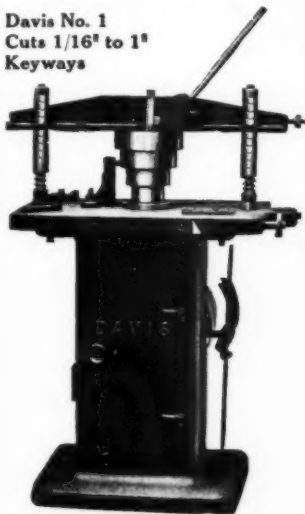
Write for descriptive Circular and price

The Alto Mfg. Co., 1647-51 Wolfram St.
Chicago, Ill.

Rapid Keyseating—

In Quantity or in Small Lots

Davis No. 1
Cuts $1/16"$ to $1"$
Keyways



Cutting Keyway in Cone Pulley

THE DAVIS

has the
speed for
economical
production
of standard
parts.

THE DAVIS

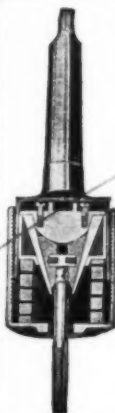
can be
set up
quickly
in the
general
shop for
all sizes
of keyways
within its
capacity.

The Davis is simply constructed, is difficult to get out of order, and is easy to adjust and operate. It is a rapid and economical producer of accurate keyways under all conditions.

Write for folder, which describes it fully, with a table of cutting time that tells its own story.

Davis Keyseater Company

255½ Mill St., Rochester, N. Y., U. S. A.



Difficult tapping— made easy and safe

The Woodstock Improved Safety Tapping Chuck has revolutionized tapping in many shops. Users find it successful in tough metals, blind tapping and bottom tapping in shallow holes, where a stop on the machine is worthless.

For more than nine years the Woodstock has been solving difficult tapping problems, and no doubt could solve yours today. Made in five sizes.

*Just ask us to send one on trial
for that "tap busting" job.*

Peter Bros. Mfg. Co., 115 Railroad St.,
ALGONQUIN, ILL.



The Drill Chuck

You've Been Looking For

THE "TITAN" has the best features of other high-grade chucks, plus—

A Real Quick Change

No separate key to get lost. No hammer or special device required. Simply strike end of drill and out it comes. A one-armed man can do it.

Sizes Nos. 0 to 5, for any taper shank drill, counterbore, reamer, etc. The broken tang collet gives a positive drive to drills with broken tangs. Saves time. Saves money. Uses up broken drills.

Write for descriptive price list

Titan Tool Company
Erie, Penna.



All Types Keys



CRANKSHAFTS

Forged or Finished

CONNECTING RODS

Forged or Finished

MACHINE KEYS

Quick delivery—ready to drive

WOODRUFF KEYS

Ship from Stock

TAPER PINS

Ship from Stock

Send us your inquiries

Wm. Leard Co.

6th Ave.

New Brighton, Pa.



Hand-operated
Self-tightening

Ettco

Keyless—Ball Bearing Drill Chuck Continuous Grip

As the load increases the *Ettco* grips harder. It releases by hand—always. It saves time, drills—and chuck repairs are practically eliminated.

Send for details of special exchange offer

Use ETTCOS on your electric drills

Eastern Tube & Tool Company, Inc., 600 Johnson Ave., BROOKLYN, N.Y.

Speed — Uniformity — Finish In Riveting



Speed: One rivet per second.

Uniformity: Each rivet headed with same degree of tightness or looseness as desired.

Finish: Perfectly formed, highly polished heads—no hammer or tool marks.

Grant Noiseless

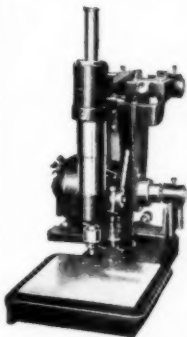
Rotary Rivet Spinners are the only machines built which will accomplish the above, and they may be *operated by cheap help.*

*Ask for Catalog, showing several styles
Also send samples of work for riveting*

The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.

Sigourney Sensitive Drills

*The Quality Tools
That Reduce Costs*



SIGOURNEY Drills are designed for those who realize that the best tools pay the largest returns on the investment.

Made with one to four spindles, plain or ball bearing, belt or motor drive. *All parts interchangeable.*

The illustration shows our motor-driven, all-ball-bearing No. 0 High Speed Bench Drill, which may be operated up to 10,000 R. P. M.

*Full data and prices
sent you on request.*

Sigourney Tool Co.
Hartford, Conn., U. S. A.

14" Sensitive Drill

Accurate—Convenient

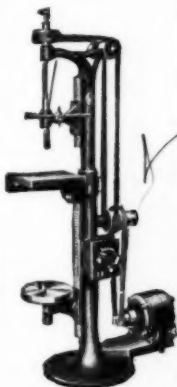
You will find the U. S. a reliable, rigid tool for the rapid and economical drilling of holes $\frac{1}{2}$ " and smaller.

**Price with motor,
switch and belts. \$115**

**Or without motor,
switch and belts. \$70**

Built in a machine tool shop, according to the best engineering practices. Steel spindle, ground to size, with ball thrust bearing; vertical adjustment to head; tables for long and short work; three speeds. Further details upon request.

The U. S. Machine Tool Co.
1952 W. 6th St., Cincinnati, Ohio





A BIG SAVING in Your Drilling Costs

A U. S. Multiple Spindle Drill Head transforms a single-spindle drill into a multiple spindle.

You can drill two or more holes with the same speeds and feeds you use for drilling one.

Special Heads Made to Order

They all have patented double adjustment, which permits drilling in any pattern. *Writing us incurs no obligation.*

The United States Drill Head Co., 1952 W. Sixth St., CINCINNATI, O.

Michigan Agents—National Sales Engineering Corp., Detroit, Mich.

The "Utility" Counterbore and Spot Facer Saves Time, Money

It has the Pilot that *cannot* twist off.

**Write
for
Catalog**



Eliminates

- broken pilots.
- broken cutters.
- trouble in removing cutters from holders.
- trouble with set screws coming loose.

Cutter drive is simple and powerful, and the cutter is easily removed.

Counterbore and spot facer troubles practically done away with.

The J. C. Glenzer Company
8469 Epworth Blvd., Detroit, Mich.

Adjustable Threading Dies FOR BOLTS AND RODS

Requiring no reversing to remove them.
Also adjustable centering jaws in the new pattern



"DUPLEX" Die Stock Set

Each cutting edge on separate flat piece makes sharpening easy. Wide adjustment.

THE HART MFG. CO., 2319 E. 20th St., CLEVELAND, O.

Sheldon Arbor Presses

Semi-Steel Frames.
Alloy-Steel Rams and Pinions. Heat Treated.
Large Stub Teeth.
Square Rams, carefully fitted, insuring proper alignment.

Ask for
complete
catalogue
and
price list.



No. 1



No. 2



No. 3

SHELDON MACHINE COMPANY
3251 Cottage Grove Ave., CHICAGO, ILL.

Vanderbeek Universal Joints



—represent the practical refinements of 25 years experience in manufacturing Universal Joints. All parts are generous sized, fully protected against dirt, and are practically self-oiling. Exceptionally strong, they transmit full power up to 70°.

Vanderbeek Joints are in daily use on thousands of machines.

*Write today for our
Descriptive Catalog.*

American Tool Works, Inc.
Hartford, Conn., U. S. A.



SEND BLUEPRINTS for Quotations on Hollow Bored Forgings and Steel Shafts



**Piston Rods
Clutch Shafts
Lathe Spindles**

**Rams
Steel Pipes
Etc., Etc.**

You'll be pleased with our service

American Hollow Boring Co.
Erie, Penna.

NATCO

Universal Joints



The interchangeable method of manufacture of NATCO Universal Joints permits repair parts replacement to overcome natural wear. Complete replacement is very seldom necessary.

Manufactured in the following sizes—
 $\frac{3}{4}$ "—1"—1 $\frac{1}{4}$ "—1 $\frac{1}{2}$ "—2"

*Descriptive Bulletin will be
sent on request.*

National Automatic Tool Co.
Richmond, Indiana

Wanted—A Job



At heavy lifting and lugging. You pay for me only once, and I will hustle for you years and years without wages. For a comparatively small initial cost I will do the work of 6 to 10 men.

My name is "The Can Ton Portable Crane and Hoist," known everywhere as "The Handiest Boy—I mean Tool—in the Shop."

In case I appeal to you as a likely chap, just write my people for booklet E8.

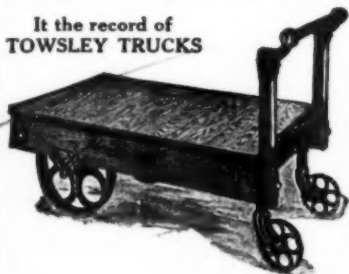
And my brothers, both large and small, are also honest, dependable hustlers.

CANTON FOUNDRY & MACHINE CO., Canton, Ohio

New York Office: 203 East 15th Street, Second Floor

500% Annual Dividends

It the record of
TOWSLEY TRUCKS



**TOWSLEY
TRUCKS**

repay their cost every two to three months.

Let us tell you how.

Made in every style for every need.

Write us about this profitable investment

John T. Towsley Mfg. Co., Cincinnati, Ohio

TRIBLOC CHAIN HOISTS

Use them
in every department

Profitable operation of expensive heavy machinery requires quick set-ups.

In every department, where heavy loads are handled frequently—such as placing gears on gear cutters, lifting work to planer beds, etc.,—Tribloc Chain Hoists soon prove their economy. Their use cancels waste of time, labor and idle machines—it shortens machining time from "floor to floor."

Easily controlled—safe—positive—Tribloc Chain Hoists can reduce the number of payroll dollars exchanged for mere brawn.

Learn more about these sturdy load-lifters by sending for Catalog 7-B.

Ford Chain Block Co.

2nd & Diamond Sts.,
PHILADELPHIA, PA.



Jacob
Chuck

Wouldn't it Profit You to Use a
General-Purpose Woodworker

In many a shop it is a great convenience, as well as an economy to have one handy machine which will perform many wood working operations easily, accurately and quickly.

The 20th Century Woodworker

does ripping, crosscutting, planing, boring, jointing, sanding, grinding, as well as dadoing, routing, plowing, mitering, moulding, matching, tenoning, etc. The design of the machine, its ball bearing, machine-tool construction, insures greater efficiency, ease of operation and accuracy. The Nippon Chuck is part of the regular equipment for boring and drilling.

Write for the handsome folder, illustrating many operations.

CRESSON-MORRIS CO.,

18th Street & A

*This advertisement is in the
interests of good Drill
by the makers of the Jacob*

Speed your work



to Use a
Woodworker?

well as an economy, to
many woodworking

Woodworker

jointing, sanding and
g, mitering, rabbeting.
n of the machine, with
ures greatest transmis-
cy. The No. 3 Jacobs
ring and drilling.

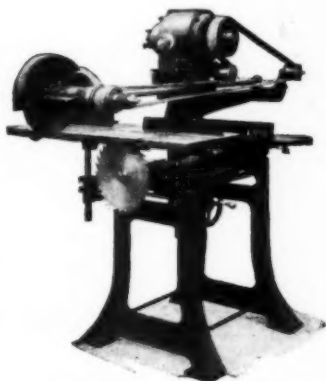
many operations

Street & Allegheny Ave.,

PHILADELPHIA, PA.

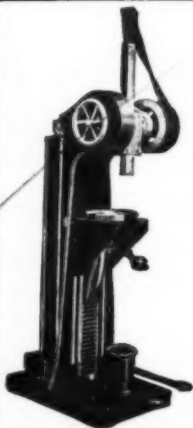
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Drilling Equipment
the Jacobs Chuck

work with good equipment



The Jacobs Chuck is used for Boring and Drilling





Atlas Arbor Presses

For All Forcing Operations

Illustration shows our No. 55 Power Drive Press, which is adaptable for fast production work and capable of supplying ten tons pressure.

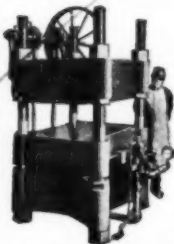
*Write for our Bulletin—
showing 30 different sizes*

Atlas Press Co.

*Department B,
Kalamazoo, Michigan*

Do You Know

**That Hydraulic Presses Can Be Made To
Operate As Fast As Geared Presses ?**



WE SPECIALIZE—

**on Quick-Acting Presses
with Automatic Control.**

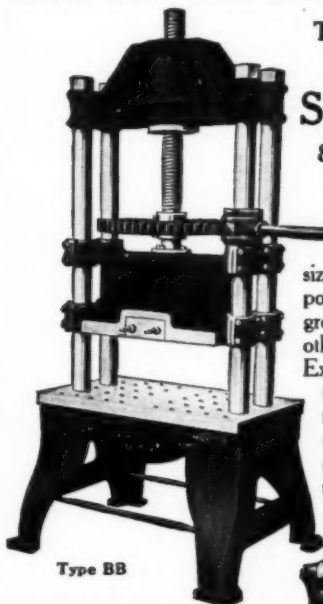
WE BUILD—

**Presses in Any Size and
for Any Purpose Requir-
ing Pressure.**

Write For Catalog

LOURIE MFG. CO., Springfield, Ill.

Best for Heaviest Work—



Type BB

This Up-To-Date 1-Man 4-Post Screw Press

80-Ton Pressure
20"x36" Table

We also make three smaller sizes, but this sturdy four-poster is stronger and has greater rigidity than any other press of this type. Extremely convenient—the tool maker requires no help in handling the dies. All four sizes are real time and labor savers.

This Surface Grinder

is a revelation in quiet efficiency. Powerful, rigid and accurate. Has non-vibrating wheel. Both feeds have graduated dial.

Economy Tools. Write for Details

**JARECKI MACHINE
AND TOOL CO.**

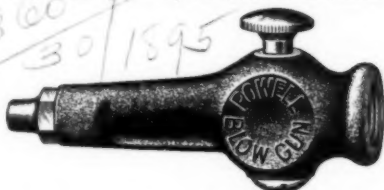
Successor to Manhattan Machine & Tool Works
Dept. A. GRAND RAPIDS, MICH.



POWELL BLOW GUN

Designed to dispense AIR with utmost economy

Used for cleaning machines, machine tools and work benches



Made with different tips for special requirements.

Circular on request

The Wm. Powell Co.

2525 Spring Grove Ave.,

Cincinnati, O.



"Borgeson Universal Joints"

Are you a user of Universal Joints?

If so!

Remember well and bear in mind that a good Universal Joint is hard to find. But if you want one tried and true, you will want the "Borgeson" before you are through.

You will become not only a "Buyer" but a "Booster" for "Borgeson."

SIZES: $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, 2, $2\frac{1}{2}$, $2\frac{3}{4}$.

Should you require Special Universal Joints, be sure to write for quotation.

Complete description gladly furnished upon request

The Borgeson Mfg. Co., Inc.

Torrington, Conn.

This Power Feed Miller \$220

BURKE No. 4

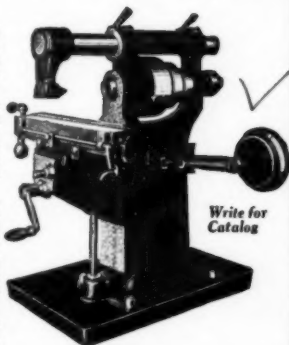
Longitudinal feed.....8"
 Traverse feed.....4"
 Vertical feed.....8"
 Table surface.....3½"x16"

Can be equipped with Index Centers, Vertical Milling Attachment, Slotting Attachment, Draw-in Chuck Attachment, and vises with plain or swivel base or quick acting. Very accurate.

We make both power and hand feed machines at prices ranging from \$125 to \$220.

**The BURKE MACHINE
 TOOL COMPANY**

297 East 16th Street
 CONNEAUT, OHIO



Write for
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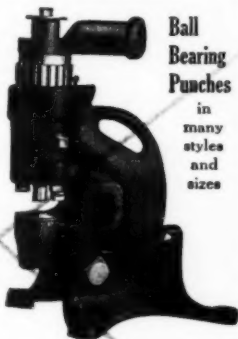
Whitney ^{Ball Bearing} Punch No. 40

Made of 45-50 point O. H. Steel, drop forged. Very rigid—no springing in operation. Now provided with movable handle, to meet user's needs.

Capacity ⅝" thru ⅞" iron
 Depth of throat, 3½"
 Height of throat, 2"
 Weight complete, 87 lbs.

The elimination of friction insures more work at less cost in all Whitney Punches.

Write for Catalog and Price List



Ball
 Bearing
 Punches

in
 many
 styles
 and
 sizes

Whitney Metal Tool Co.

95 Forbes Street,

Rockford, Ill.

Empress Oil Cups and Grease Cups

The Empress line of grease and oil cups is complete; it consists of over fifty different types in several sizes. Write for Booklet No. R-103, it gives full data. A cup for every purpose.

Bowen Products Corporation
Auburn, New York



NO. 50



NO. 116



NO. 58



NO. 5739



NO. 52



NO. 110



NO. 54



NO. 56



NO. 207



NO. 200



NO. 249



NO. 209



NO. 218



NO. 213



Style "WC"



Style "O"



The Hinge



Style "G"



Style "A"

Gravity Feed—flushes the bearing.
Wire Wick Feed—gives desired prolonged feed.
Wire Wick—replaces waste or felt.
Made in Standard sizes.



Style "L"

Write for Catalog No. 20
Showing 255 full size illustrations with detail dimensions.



Style "U"

GITS OIL CUPS

Oil cups for every lubricating need. State style and size in which you are interested, and we will send free samples and catalog.

GITS BROS. MFG. CO
1940 SO. KILBOURN AVE., CHICAGO



Style "T"

FEDERAL DIAL COMPARATOR

-CAPACITY 6"-



With Indicator
Graduated .001"

\$33.50

With Indicator
Graduated .0001"

\$48.50

SEND FOR COMPLETE CATALOG

Federal Products Corporation
Elbow & Chestnut Sts., Providence, R. I.



"Gusher" Motor Driven Machine Tool Lubricant Pumps

"GUSHER" PUMPS are simple, efficient, require the least power, and stand wear and tear. They are "Pumps of Quality."

No gears—no foot or relief valves—no packing nuts—no priming—no injury from grit or small chips.

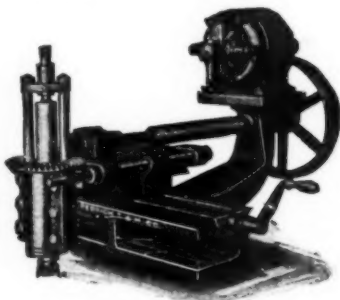
Capacities, 3 to 30 gallons per minute. Made also to set outside reservoir and connect by piping where that is desirable.

May we send Catalog and prices?

The Ruthman Mchy. Co.
528-534 E. Front St.
CINCINNATI, OHIO

Without a Pedrick
Portable Milling Machine

**You Often Pay Its Price
In Delay On One Job**



To appreciate its value just add the savings you could effect in a year by taking this handy, ever-ready tool to the job instead of bringing the job to the tool, then subtract the price. Result—net earning power.

You need this Pedrick Miller to do those big jobs that your standard machines cannot handle.

Catalogue explains all its various operations—a comprehensive book of reference and key to manifold savings. Your copy is waiting—shall we send it now?

Pedrick Tool & Machine Co.

Headquarters for Portable Machine Tools
Boring Bars, Crank Pin Turners, Pipe Benders, etc.

3644 N. Lawrence St.,

Philadelphia, Pa.

Second-Hand Machinery

Lists of Second-Hand Machinery, either For Sale, Wanted or For Exchange, set in uniform style, will be published under this heading at the rate of **50 cents a line**, across the page, each issue, plus **\$2.50** for name and address. Minimum charge, **\$5.00**. No display permitted in this department.

Write directly to those offering the machines for sale for prices and full descriptions. If what you seek is not listed, use the blank enclosed to make known your wants to the publisher, who will pass them along to all Machine Tool Blue Book advertisers.

Circulation of Machine Tool Blue Book, 25,000.

FOR SALE BY

Botwinik Brothers, Inc., - 67 Water St., New Haven, Conn.

SHAPERS.

10—Hendey 15" friction shapers, complete with vises, countershafts, wrenches, etc., used but in first-class working condition throughout, having been overhauled. Price \$195.00 each, f. o. b. cars, New Haven, Conn. Wire, write or phone.

FOR SALE BY

Boston Gear Works Inc., - Norfolk Downs, (Quincy) Mass.

ELECTRIC HARDENING FURNACE.

One F. C. 206 Hoskins electric furnace for hardening high speed steel, complete with panel board, switches and ammeter. Wired for 550 volts, 75 amps. Used about 50 heating hours. Serial No. 9659. Purchased September, 1923. Cost new \$1110.00. Make offer.

FOR SALE BY

The Ben Alvea Company, 234 S. Topeka Ave., Wichita, Kansas

Drill, Hoefler 4-spindle.
Miller, No. 3 Kempsmith plain.
Turret, No. 4 Brown & Sharpe.
Turret, Woods Tilted Turret.
Turret, 12" Reed.

FOR SALE BY

Sherrod S. MacIntosh & Co., 408 Frankfort Ave., N.W., Cleveland, O.

Cleveland 14" model A, reasonable, 88%.
Drill, 24" Aurora, sliding head, tapping, 98%.
Lathe, 24"x10' South Bend, 30" blocks, 90%.
Press, 51 Toledo arch, geared, inclined legs, 90%.
Shear, 8' Ohl 3/16" squaring, motor drive, 92%.

FOR SALE BY

Bennett Machinery Co.,

30 Church St., New York City

Drills, 14" to 30" Barnes & Rockford
Keyseater, No. 4 Mitts & Merrill
Lathe, 18"x 8' Hendey, yoke, q c.g.
Lathe, 22"x14' Whitcomb-Blaisdell.
Miller, universal, No. 2 Milwaukee,
cone.

Miller, univ., No. 2 Kempsmith 98%.
Miller, univ., No. 3 Hendey, cone
head.
Planer, 48"x18' Pond, 4 head, \$2000.
Radial, 6' Pond, belted type, heavy.
Radial, 4' Dreses, cone drive.

SECOND-HAND MACHINERY

FOR SALE BY

Cyril J. Bath & Co., E. 70th & Mch. Ave., N. E., Cleveland, O.

BORING MILLS—VERTICAL.

- | | |
|--|---|
| 42" Baush, 2 swivel heads, 75%. | 7' Betts, double head, 85%. |
| 42" Bullard rapid production, with one swivel and one turret hd., 80%. | 60" Niles, 2 swivel heads and one internal boring head. |

BORING MILLS—HORIZONTAL.

- | | |
|--|---|
| No. 21 Lucas, table type, 75%. | No. 35-A Landis, floor type, horizontal, 90%. |
| No. 36 Landis, floor type, 3 $\frac{1}{2}$ " bar, 80%. | |

DRAW BENCHES.

- 15,000 lbs. to 25,000 lbs. Waterbury-Farrel, United Engineering and Standard; 20" draw, with 18' extensions for mandrels, heavy cast iron; 85%.

DRILLS—MULTI-SPINDLE.

- | | |
|----------------------------|--------------------------------|
| 4-spindle 20" Barnes, 85%. | 4-spindle Barr sensitive, 85%. |
|----------------------------|--------------------------------|

DRILLS—RADIAL.

- | | |
|-------------------|------------------------|
| 4' & 5' Bickford. | No. 1, 8" wall radial. |
|-------------------|------------------------|

DRILLS—UPRIGHT.

- | | |
|---|--------------------------------------|
| 24" Cincinnati, slid. hd., fric. bk. grs. | 32" Cincinnati, with tap. att., 75%. |
| 28" Cincinnati, sliding head, 80%. | 24" No. 25 Foote-Burt, 90%. |

FORGING MACHINES AND BULLDOZERS.

- | | |
|-------------------------------------|---|
| 1" Ajax, steel bed, 90%. | No. 5 Ajax high speed, stop motion bulldozer 14" stroke, 40 strokes per minute. |
| 1" Ajax, cast iron bed, (3), 75%. | 250-ton Mesta steam hydraulic, 85%. |
| No. 6 Williams & White, 20" stroke. | |
| 4" Acme, steel bed, 90%. | |

GRINDERS.

- | | |
|--------------------------------------|--|
| No. 3 Brown & Sharpe univ., 70%. | 18x96" Norton plain, 75%. |
| 10x36" Modern univ., and parts, 70%. | Mammoth shear blade grinder, capacity 100" long. |
| 84" Diamond surface, 85%. | |
| No. 4 Gardner, motor, disc, 85%. | |

HAMMERS.

- | | |
|---|--|
| No. 2 Nazel, air, arranged motor dr. | 1500-lb. Waterbury-Farrell, board drop, 80%, (2). |
| 100-lb. Bradley, helve, 75%—90% (3). | 2000-lb. Waterbury-Farrell, board drop, 80%, (2). |
| 350 lb. Bement-Miles, steam forging. | 2500 lb. Bement-Miles, stm. forging. |
| 800 lb. Bement-Miles, steam forging. | 8000 lb. Chambersburg, stm. forging. |
| 800-lb. Billings & S., board drop, 75%. | 800-lb. to 4000 lb. Chambersburg and Massillon steam drop hammers. |
| 800-lb. Waterbury-F., board dr., 75%. | |
| 800-lb. Lane, steam forging. | |
| 1500 lb. Lane steam forging. | |

LATHES.

- | | |
|--|---|
| 16" to 20" tool room, various lengths. | 32"x32' Bridgeford, comp. rest, m. d. |
| 20"x10' Prentice, geared head, 85%. | 36"x44' Bridgeford, c. r., m. d. |
| 25"x12' LeBlond heavy duty. | 48"x26' Bridgeford, grd. hd., t. a., 85%. |
| 27"x22' Bridgeford, pl. turning, m. d. | 54"x34' Houston, Stanwood & Gamble, geared head, motor drive. |
| 30"x22' Bridgeford, pl. turning, m. d. | |
| 32"x18' Schumacher, cone head, 60%. | |

MILLING MACHINES.

- | | |
|--------------------------------------|--|
| Style "B" Gooley & Edlund, 80%, (2). | Becker miller, model "C," table 14"x54", motor drive, 85%. |
| No. 2 Cincinnati plain, 80%. | 60"x42"x16' Ingersoll, fixed rail, 4hds. |
| No. 3 Brown & Sharpe, plain, 85%. | |
| No. 3B Brown & S., pl., heavy, 60%. | |

PLANERS.

- | | |
|-------------------------------------|--|
| 30"x30"x8' Gray, single head, 80%. | 60"x48"x16' Pond, 2 hds., old style, light pattern, 50%. |
| 72"x72"x16' Betts, four heads, 90%. | |

PIPE MACHINES.

- | | |
|--|--|
| No. 9 $\frac{1}{2}$ Merrill, capacity 2 $\frac{1}{2}$ " to 8". | |
| 2" Jarecki with countershaft. | |
| 4' & 5" Jarecki, with dies and countershaft, late model, 85%. | |

PRESSES.

- | | |
|---|--|
| Waterbury-Farrel trimmers, 56" flywheel, 4" stroke, 60%, (3). | |
| No. 57 Toledo trimmer, with side shear, 80%. | |
| Waterbury-Farrel trimmers, 60" flywheel, 80%, (2). | |
| 59 $\frac{1}{2}$ Toledo, straight side, single crank, tie rod frame, 80%. | |
| No. 56 Consolidated, 4" stroke, 80%. | |

SECOND-HAND MACHINERY

Cyril J. Bath & Co.—Continued

PUNCHES AND SHEARS.

No. 2 Hilles & Jones horizontal punch, 70%.
 54" gap American ship punch, capacity 1" thru 1", 70%.
 84" throat, Long & Allstatter capacity about 1" thru 1".
 Kling Bros. horn press, 60" horn, flywheel 50" dia., 6 1/2" face.
 48" throat No. 4 Southwark, capacity 2"x1 1/2".
 48" throat No. 5 Southwark, capacity 2"x1 1/2".
 60" throat No. 5 Southwark, capacity 1 1/2"x1 1/2".
 36" throat style G, Cleveland, capacity 1 1/2"x9" flat or 2 1/2" round bars.
 No. 6 Quickwork rotary shear, capacity up to 1 1/2" plate.
 36" throat Lennox rotary shear, capacity about 1 1/2" plate.

SAWS.

48" Newton cold saw, motor drive. | Power hack saws, 6" to 9".

SHAPERS.

20" American, crank. belt, 80%. | 32" Gould & E. invincible type.
 24" Walcott, crank, back geared, 90%.

SLOTTERS.

48" Niles-Bement-Pond, motor dr. | 12" Sellers, 75%.
 10" Newton, with countershaft, 75%.

TUMBLING BARRELS.

Several sets 18"x48" chill lined square, with roller bearings and exhaust.

TURRET LATHES AND SCREW MACHINES.

21" Gisholt, standard model, 70%. | No. 3A Warner & Swasey.

MISCELLANEOUS.

Acetylene generator, Davis.
 Blower, No. 4 Root, motor drive.
 Blower, American, 8' fan, motor driven, 85%.
 Blowers, Sturtevant, motor driven, 85%, (2).
 Boring machine, for cylinders, portable, 4" bar, 7" feed, arranged for motor or engine drive, 75%.
 Gear cutter, 36" Gould & Eberhardt, 60%.
 Keyseater, No. 2 Davis.
 Keyseater, No. 4 Mitts & Merrill.

FOR SALE BY

McCoy-Brandt Machinery Co.,

210-14 Penn Ave., Pittsburgh, Pa.

Accumulator, Southwark, 10", 15' str.
 Air compressor, 10"x10", with motor, 3-60-220 volts.
 Air compressor, 212 cu. ft., Chicago portable, oil driven.
 Boring mche., 5" bar, Barrett horiz.
 Boring mill, 48" Colburn, 2 heads.
 Boring mill, 6" bar, Niles horiz.
 Boring mill, 10" Niles, 2 heads.
 Bulldozers, Nos. 5 & 30 W.-W.
 Bulldozer, No. 8 Ajax, 36" str., m. d.
 Drills, radial, 5' Prentice, a. p. d.
 Drill, radial, 6' Prentice, belt drive.
 Forging machines, 2" and 3".
 Grinder, 16"x68" Landis crankshaft.
 Grinders, 12"x48" Cincinnati plain.
 Grinder, Gisholt universal tool.
 Grinder, 36" Diamond wet tool.
 Grinder, 10"x32" Ott universal.
 Grinder, No. 4 Gardner double disc.
 Lathe, No. 5 Rivett precision with turret, etc.
 Lathe, 16"x10" L. & S., cone, taper.
 Lathe, 19"x14" LeBlond, grd. hd.
 Lathe, 24"x26" American, q.c.g., m.d.
 Lathe, 27"x18" L. & S., m. d., t. a.

Lathe, 30"x18" L. & S., m. d., t. a.
 Lathe, 36"x20" Sidney, q. c. g., cone.
 Lathe, 54"x31" Johnson, trip. grd.
 Lathe, 60"x31" Johnson, triple grd.
 Millers, horiz., Nos. 3 & 5 Cincinnati.
 Miller, vertical, No. 0 Bickett.
 Millers, Nos. 2, 3C & 6 Becker vert.
 Millers, vertical, No. 3 Brown & Sharpe, motor drive.
 Miller and drill, No. 1 Knight.
 Motor, 1/2 h. p. Wagner, 1-60-110, 1750 r. p. m.
 Pipe machines, 12", 10", 8", 4" & 2".
 Planer, 30"x30"x8" N. B. P., 1 head.
 Planer, 36x36x12" Powell, 3 heads, like new.
 Planer, 30"x30"x8" Flather, 1 head.
 Punch, 36" Cleveland 1 1/2"x1", m. d., arch. jaw.
 Punch, 24" Cleveland 1 1/2"x1", m. d., arch. jaw.
 Rolls, bending, 16"x3" Wickes, m. d.
 Shears, guil., cap. 2 1/2" and 2" and 1".
 Shear, rotary bevel, cap. 4", m. d.
 Slotter, 12" Newton, crank, cheap.
 Turret lathe, 18" Libby, like new.

SECOND-HAND MACHINERY

FOR SALE BY

Reliance Machinery Sales Company

Brighton Road at Pennsylvania Ave., - - Pittsburgh, Pa.

Automatic, 2" Cleveland, model "A".
Automatic, 2 1/2-3 1/2" Cleveland, model A.
Automatic, OG Brown & S., m. d.
Bolt cutter, 1 1/2" Landis, double hd.
Bolt cutter, 2" National, single hd.
Bolt cutter, 3" Landis, single head.
Boring mill, 24" Bullard, rapid prod.
Boring mill, 30" Bullard, 1 head.
Boring mill, 34" Colburn, 1 head.
Boring mill, 42" Bullard, 2 heads.
Boring mill, 42" King, m. d.
Boring mill, 54" Bullard Maxi, m. d.
Boring mill, 72" Betts, 2 heads.
Brake, 60" Dreis & Krump, cap. 14
ga., m. d.
Broach, Nos. 3&4 LaPointe (Hudson)
Buffer, 2 h.p. U. S. Elec. 220-3-60.
Bulldozer, No. 5 Williams & White.
Compressor, Chicago Pneumatic,
145", m. d.
Die slotter, 3 1/2" stroke, Garvin.
Drill, 14" Leland-G. -gl. spdl., m. d.
Drill, 14" Leland-G. 6-spdl., m. d.
Drill, 13" Fosdick super speed, six
spindle, m. d.
Drill, 16" Fosdick high speed, six
spindle, m. d.
Drill, 20" Rockford, 3-spdl., m. d.
Drill, No. 4 Foote-Burt 4 spindle.
Drill, Reed, 4-spindle, cap. 1/2".
Drill, Moline, 3-spindle, No. 2 taper.
Drill, Moline, 6 spindle, No. 3 taper.
Drill, Raush, 8-spindle, No. 3 taper.
Drill, Moline, 16-spdl., No. 3 taper.
Drill, No. 30 Natco, 12-sp., No. 3 tap'r.
Drill, No. 13 Natco, 16-sp., No. 3 tap'r.
Drill, 20" Barnes, camel back.
Drill, 21" Cincinnati, sliding head.
Drill, 24" Hoefler, sliding head.
Drill, 36" Snyder, sliding head.
Drill, No. 310 Baker heavy duty.
Drill, 20" Foote-Burt heavy duty.
Drill, 24" Foote-Burt heavy duty.
Drill, No. 23 Foote-Burt hvy. duty.
Gear cutter, 36"x10"G. & E., s. p. d.
Grinder, type RA U. S. Electric,
tool post.
Grinder, type KKA U. S. Electric,
double end.
Grinder, 20" Besly disc, m. d. 220-3-60.
Grinder, Oliver drill, m. d., cap. 1/2".
Grinder, No. 14 Besly disc.
Grinder, No. 16 Besly disc.
Grinder, No. 14 Gardner disc.
Grinder, No. 70 Heald internal.
Grinder, No. 5 Bridgeport wet tool.
Grinder, No. 14 Wood universal.
Grinder, No. 1 Norton univ. tool.
Grinder, No. 3 Brown & S. univ.
Grinder, Norton, 6"x32" plain.
Grinder, 10"x20" Landis, plain.
Hack saw, 6"x6" Peerless, belt dr.
Hammer, No. 4 Beaudry, mtr. dr.
Hammer, No. 1AA High Speed,
capacity 1/16".
Lathe, 12"x6" Seneca Falls.
Lathe, 12"x10" Davis tool r'm. q.c.g.
Lathe, 14"x6" Seneca Falls, q. c. g.
Lathe, 14"x6" Hendey, tie bar.
Lathe, 14"x6" Prentice, geared hd.
Lathe, 14"x8" Whitcomb-Blaisdell.
Lathe, 16"x8" Hendey, tie bar.
Lathe, 16"x8" Cincinnati, q. c. g.
Lathe, 17"x8" Sidney, hvy. duty, q.c.g.
Lathe, 18"x8" Lodge & Shipley, q.c.
g., m. d.
Lathe, 18"x8" Rahn & Larmon, q.c.g.
Lathe, 18x10" Reed, q. c. g., d. b. g.
Lathe, 22"x10" Putnam, hvy. duty.
Lathe, 24"x12" Reed Prentice, s.p.d.
Lathe, 26"x12" Bridgeford hvy. duty.
Lathe, 27"x28" Schumacher-B., q.c.g.
Lathe, 30"x12" Johnson, triple grd.
Lathe, 30"x16" New Haven, q. c. g.
Lathe, 33"x12" Pond, triple geared.
Lathe, 34"x12" LeBlond, triple grd.
Lathe, 36"x20" Pond, geared head.
Lathe, 36"x34" Bridgeford, m. d.
Lathe, 38"x50" New Haven, dbl. hd.
Lathe, 42"x31" Pond, triple geared.
Miller, No. 1 U. S., complete.
Miller, No. 2 Cincinnati h. p. vert.
Miller, No. 2 Cincinnati plain, v. a.
Miller, No. 3 Hendey plain.
Miller, No. 29 Oesterlein universal.
Miller, No. 42 Oesterlein universal.
Miller, model B Becker, vert., s.p.d.
Miller, model C Becker vertical.
Millers, Sellers, Lincoln type, (2).
Miller, No. 2 Knight.
Millers, No. 25 Becker plain, (3).
Pipe machine, 1/2" to 2" Armstrong.
Pipe machine, Bignall & Keeler, 1/2"
to 2", m. d.
Pipe machine, Jarecki, cap. 1" to 4".
Pipe machine, Merrill, 1 1/2" to 6".
Pipe machine, 8" Cox, cap. 3 1/2" to 8".
Pipe machine, Merrill, 2 1/2" to 12".
Pipe machine, 12" Cox, cap. 6" to 12".
Pipe machine, 16" Cox, cap. 8" to 16".
Planer, 24"x24"x6" Gray, 1 hd.
Planer, 30"x30"x10" Woodward & P.
Planer, 36"x36"x8" Cincinnati, 1 hd.
Planer, 36"x36"x10" Pond, rev. m. d.
Planer, 60"x60"x16" Betts, 3 heads,
rev. m. d.
Planer, 72"x72"x16" Detrick & Har-
vey open side, m. d.
Press, No. 10 Bliss, reducing, 4" str.
Press, No. 23 Stoll, horning.
Presses, Nos. 61 & 62 Bliss, o. b. i., f.w.
Press, No. 87 Niagara screw press.
Press, Ferracute DD2, o. b. i., cam.
Press, No. 65 Consolidated, 5" str.
Press, No. 168 Toledo toggle.
Press, No. 305 Bliss straight sided.

SECOND-HAND MACHINERY

Reliance Machinery Sales Company—Continued.

Press, No. 5-A Bliss, toggle.
 Press, No. 13-A Bliss, toggle.
 Punch, Reade s. e. 4" x 4", arch. jaw.
 Punch, type "C" Cleve., arch. jaw.
 Punch, Wickes, 48" thrt., cap. 1 1/2" x 1".
 Radial drill, 2 1/2" Carlton high spd.
 Radial drill, 4" Prentice plain.
 Radial drill, 5" Prentice plain.
 Reduction gear, Foote, 50 to 1.
 Saw, Williamson metal band.
 Saw, No. 1 Klemm metal band.
 Saw, No. 8 Marvel metal band.
 Saws, American metal sw., m. d., (2).
 Sand blast, Pangborn type EA, size No. 2.
 Screw machine, No. 2 Warner & Swasey, plain head.
 Shaper, 16" Juengst b. g. crank.
 Shaper, 20" Cincinnati b. g. crank.

Shaper, 24" Cincinnati b. g. crank.
 Shaper, 24" Milwaukee b. g. crank.
 Shaper, 24" G. & E. b. g. crank.
 Shear, No. 2 Quickwork rotary.
 Shear, 72" Wais & Roos, 12" gap.
 Shear, 96" Stoll, 16 gauge.
 Shear, squaring, 96" power, 20 ga.
 Tapping mch., 2" Baker, type F-4.
 Tapping mch., 8" Baker, type K-11.
 Tooth rounder, 12" Rochester.
 Turret lathes, 2 1/2" x 26" Acme.
 Turret lathes, 2 1/2" x 24" Jones & L.
 Turret lathes, 18" Libby, 3/4" hole, belted motor drive.
 Turret lathes, 24" Gisholt, 6 1/4" hole, motor drive.
 Turret lathes, 24" Steinle, 6 1/4" hole, motor drive.
 Upsetter, 4" Acme, steel bed.

Our warehouse is full of bargains. What have you for sale?

FOR SALE BY

B. L. Saltzman,

524-526 W. Van Buren St., Chicago, Ill.

LATHES.

15" x 6' Shepard new, single pulley.
 18" x 10' American.
 26" x 12' Walcott.
 12" x 5' Vernon, with taper attach.

Pratt & Whitney turret lathe, 8".
 No. 22 Garvin screw machine.
 No. 1, No. 2, No. 3 and No. 4 Wood turret lathes.

DRILL PRESSES.

1, 2 and 3 spindle Allen 14".
 21" b. g. Champion, new.

20" b. g. Silver.
 20" plain, also bench drills.

MISCELLANEOUS.

Circular and slitting shears, rollers.
 Gap shear, No. 536 Niagara.
 Motors, a. c. & d. c., 1/6 to 200 h. p.

Motors, 1/2 h. p. new, single phase, 110-220 volt, \$32.50.
 Punch and shear, No. 136 Niagara.

Tinners' and Woodworking Tools. Factory Transmission.

FOR SALE BY

A. M. Stoehr Machinery Co.,

560 W. Adams St., Chicago, Ill.

Bolt cutters, 3 & 6-spindle Acme.
 Boring mills, 42" Baush; 54 & 60" Niles; all have 2 heads; and others.
 Compressors, 12 different sizes.
 Drill presses, single spd., L. & G.; 2-spindle H. & W.; 4-spdl. Foote-Burt; 4-spdl. Barnes; 22" Rockford.
 Gear hobbors, cutters; No. 12 Barber-C., 48" & 60" G. & E.; 36" Fellows gear shaper, and others.
 Grinders, Heald piston ring (2); No. 3 LaSalle plain and surface; 3x18" Norton, and others.
 Header, No. 2 Manville.
 Lathes, 22" to 44" McCabe; 18x8 Barnes, hvy. duty; 19x8 LeBlond, q. c. g.; 16x8 Flather; 15 & 24 spinning, and others.
 Milling mchs., No. 25 Becker plain; No. 6 Whitney; No. 0 Rockford pl.; No. 3 Thurston dieing, & others.

Oil extractors, centrifugal, (8).
 Pipe machines, 6" Jarecki.
 Punch presses, No. 16 Bliss horning; No. 58 Crosby; and others.
 Punch & shears, No. 3 L. & A., d. e., 4" thru 4"; No. 14 W., d. e., 15" throat, No. 66 Badger, hand; No. 1-C New Doty, and others.
 Riveters, 1 1/2-B & No. 5-A High Speed; No. 1 Townsend; No. 1 L. & A., 4" capacity; and others.
 Saws, 9x9 Sterling high speed; 12" band, and eight others.
 Screw machines, Nos. 2 & 3 Foster (12); Nos. 52 & 53 Acme, others plain and automatic.
 Shears, Pittsburgh alligator, 1 1/2".
 Slitter, Fuller, 32".
 Tapper, R. & S., 4" capacity.
 Welders, both spot and butt.
 Wire strait'g mch., 4" Wells.

SECOND-HAND MACHINERY

FOR SALE BY

The Reeve-Fritts Co.,

558-560 Washington Blvd., Chicago, Ill.

Drill, 2-spindle Edlund, b. b.
Drill, 24" Milwaukee.
Grinder, No. 3 Rivett internal.
Grinder, No. 2 Bath universal.
Grinder, 12" Besly disc.
Lathe, 9"x12" Sundstrand.
Lathe, 16"x6" Monarch, q. c. g.

Miller, No. 2B B. & S. plain.
Pipe machine, 2" Jarecki.
Pipe machine, 6" Merrill.
Pipe machine, 12" Curtis & Curtis.
Planer, 9"x7"x24" Federal, bench.
Planer, 32"x24"x6" Rockford.
Shaper, 14" Steptoe, s. g.

FOR SALE BY

Clinton Machinery Co.,

128 S. Clinton Street, Chicago, Ill.

MILLING MACHINES.

No. 1 Kempsmith univ., b. g.,
with power feed rotary table
complete.....\$675.
No. 1 B. & S. univ., complete.....550.

No. 14 Rockford plain, comp.....\$450.
No. 21 geared Garvin.....175.
P. & W. and Hardinge, bench
type, each.....125.

LATHES.

19"x8" Springfield, s. q. c., d. b. g.....\$350.
15"x8" Carroll & Jamieson, s. q.
c., complete.....225.

14"x6" Rockford, q. c. g., taper
att. with draw-in att & collets.....\$375.
14"x6" Reed, taper att. l. c. g.....175.

SHAPERS.

14" Smith & Mills crank (2).....\$225.
17" Smith & Mills b. g. crank.....375.

20" American, b. g., univ. table.....\$650.

DRILL AND PUNCH PRESSES.

10" new Champions, bench type,
(15), each.....\$ 30.
14" new Champions, (10) each.....85.
20" Superior, lever & h. feed.....50.

24" Henry & Wright, b. b. h. s.....\$225.
No. 3 Kohler, o. b. l.....225.
No. 20 Bliss, o. b. l.....275.

MISCELLANEOUS.

Chain hoists, 1-ton \$35.; 1½ ton
\$45.; 2-ton \$50.; 3-ton.....\$ 60.
Folder, 42" Niagara.....70.
Grinder, 8" Heald, ring & surf.....75.
Hammer, No. 2-A HD hi. speed 150.

Oil separator, No. 2 American,
cap. 2540 cu. in.....\$150.
Screw machine, 2" cap. w. f. and
collets.....250.
Surface plate, 24"x36" B. & S.....75.

FOR SALE BY

Bardons & Oliver,

Cleveland, Ohio

ENGINE LATHES.

18"x8" Flather, compound rest, p. f. & t. a.....\$ 120.
14"x6" Flather, compound rest, p. f. & t. a., (2).....160.
22"x9" Flather, compound rest & power cross feed.....180.
14"x6" Reed eng. lathe, with compound rest & p. c. f.....125.
14"x6" P. & W. eng. lathe, with compound rest & p. c. f.....135.
32"x16" Gleason, double back gears, compound rest, power cross feed
and rack feed to tail stock.....600.
19"x8" LeBlond heavy duty, with compound rest, quick change gears,
p. c. f., arranged for t. a.....650.
18"x6", with compound rest and power cross feed.....130.
22"x8" Flather, compound rest, with power cross feed.....150.

MILLING MACHINES.

Pratt & Whitney plain milling (Grant pattern).....\$ 150.
No. 12 Kempsmith milling machine (Lincoln pattern).....120.

PLANERS.

24"x24" Cincinnati, one head, arranged for motor dr., without motor.....\$ 1200.
6"x6" Walter Bros., arranged for motor drive, without motor.....200.

MISCELLANEOUS.

Thread milling machine, Trundle, with several collets. This machine
is new, and has never been run.....\$ 1100.
Turret Lathes—We also have several of our older type No. 1—13/16
capacity Turret Lathes. These machines are new. Price, each.....\$ 400.

SECOND-HAND MACHINERY

FOR SALE BY

Marr-Galbreath Machinery Co.,

58 Water St., Pittsburgh, Pa.

Angle & bar bender, No. 9 Buffalo.
 Band saw, 36" Oliver, m. d.
 Bender & straightener, No. 4 H. & J.
 Blowers, No. 3 Stur., pressure.
 Blowers, pos. pres., 2, 2½ & 5" outlet.
 Bolt cutter, single 2½" head, Acme.
 Bolt cutter, single, 1½" Foote-Burt,
 Landis head.
 Bolt cutter, 1½" Acme, triple head.
 Boring mills, Rockford, 3" & 3" bar.
 Boring mill, 36" Bullard, side head.
 Boring mill, vertical, 72" Betts.
 Boring mills, 51" Niles; 16"-16" Niles.
 Boring mill, vertical 84", 2 heads.
 Boring mills, 51 & 62", 2 hds., m. d.
 Boring mill, 42" D. & H., 2 heads.
 Boring mill, 12" Pond, 2 heads.
 Brake or press, 10" Robinson, toggle.
 Bulldozer, No. 8 Ajax, new.
 Comp'r, 2500 cu. ft. L. D.G., a. c. mtr.
 Compressor, 7" x 6", Ing. Rand.
 Compressor, steam, 864 cu. ft., Bury.
 Compressor, 1300, 888, 599 cu. ft., m. d.
 Drill, radial, 6" Baush, m. d.
 Drill, radial, 5" Prentiss, t. a., m. d.
 Drill, rad'l, 4" Western, h. d., g. b., m. d.
 Drill, radial, 4" American, gear box.
 Drills, 36" Hoefer; 24" Aurora, s. h.
 Drill, 13" Washburn sensitive.
 Drill, 28" Barnes, sliding hd., b. g.
 Drill, 22" Aurora upright.
 Drills, No. 2 Colburn, mfg. type, (4).
 Exhausters, No. 8 Buffalo.
 Forging machines, 1½, 2, 2½ & 3".
 Gear cutter, No. 11 Universal Dwight.
 Gear cutter, No. 3 S. & C., auto. 1x1".
 Generator, 100 k. w., 240 v., d. c., connected to horiz. steam engine.
 Generator, 85 k. w., 240 v., d. c., connected to horiz. steam engine.
 Grinder, No. 60 Heald internal.
 Grinder, Diamond dbl. end, 14" wh.
 Grinder, disc, No. 10 Bealy, 18" wh.
 Grinder, Yankee drill, style A.
 Hack saw, 6x6 Peerless.
 Hack saw, No. 3 Marvel, cap. 6x6".
 Hack saw, No. 7-KC Atkins, 8x8.
 Hammer, 100 lb., 600 lb. sgl. fr., steam.
 Hammers, st. drop, 2000 lb. Bement.
 Hammers, st. drop, 3000 lb. Ch'b'g.
 Hammers, steam drop, 6000, 5000,
 3000, 2000, 1500 & 1000 lbs.
 Hammers, 40, 80, 100 lbs. Bradley,
 horizontal helve.
 Hammer, 125 lb. Bradley upr. strap.
 Hammers, sgl. fr., 350, 800, 1100, 1500.
 Ice machine, 1-ton, with motor.
 Keyseater, No. 1 Davis, cap. 1" key.
 Lathe, 42"x32" Am., grd. hd., m. d.
 Lathe, 32"x14", Draper, 2½" h. s.
 Lathe, 24"x10" L. & S., q. c. g.
 Lathe, 18"x10" Porter, s. b. g., c. r.
 Lathe, 18"x8" Am., q. c. g., tap. att.
 Lathe, 16"x8" Bradford, pl. change.
 Lathe, 15"x6" South Bend.

Lathe, 14"x6" Monarch, q. c. g., t. a.
 Lathe, 13"x6" Star, q. c. g.
 Lathe, speed, 11"x4" Prentiss, t-rest.
 Miller, bench, No. 1 Burke, hand.
 Miller, No. 3½ Fox, hand, 24"x6"x14".
 Miller, No. 0½ Cin. pl., 18"x6"x15".
 Miller, No. 3 Le Blond, pl. ind. hd.
 Miller, No. 2 Kempsmith universal.
 Miller, vertical, No. C4 Becker.
 Miller, Hendey Lincoln No. 2½.
 Miller, Knight duplex, tbl. 8½"x32".
 Miller, No. 0 Kempsmith universal.
 Miller, No. 3 Cincinnati, plain 32"x9x20.
 Miller, vertical No. 0 & 1 Bickett.
 Motor, 5, 3, 2 h. p., 1 phase, 60 cycle.
 Nut tapper, 3" Acme 6-sp. semi-auto.
 Oil separator, No. 2 Roper, belt.
 Pipe machine, Oster 4", belted.
 Pipe machines, 12", 6" & 2" Jarecki.
 Planer, 120"x120"x36", 4 heads, m. d.
 Planer, 74"x54"x24" Pond, 4 hds. m. d.
 Planer, o. s., 72"x72"x18", 3 hds., m. d.
 Planer, 60"x60"x12" Pond, 3 hds., m. d.
 Planer, openside 42"x42"x16", 3 hds.
 Planer, Powell, 42"x42"x16", 4 hds.
 Planer, 42"x42"x12" Betts, 1 head.
 Planer, 42"x36"x20" Cincinnati, 4 heads.
 Planer, 26"x26"x8" Niles, 1 head.
 Planer, 24"x24"x5" New H., 1 hd.
 Press, No. 10 Bliss o. b. i., bench.
 Presses, 5-A & 1 Toledo, o. b. i., pl.
 Press, No. 62 Bliss plain, 8" stroke.
 Press, No. 11 Perkins, pl. trim., 4" str.
 Press, No. 82 Consolidated horning.
 Press, No. 16 horning, swing table.
 Punch, No. 124-A Niagara, 13" t., 4x3".
 Punch & shear, hand, Schatz, 1x3".
 Punch & shear, H. & J., 72" tht.,
 cap. 1½"x1½", motor drive.
 Punch & s., No. 2 L. & A., 30" tht., a. j.
 Pyrometer, 32 to 3000 deg. F.
 Riveter, ½" Shuster, style A.
 Riveter, 80-A Grant, cap. ½".
 Riveter, Allen, jaw, 36x20x1½" rivets.
 Riveter, 20x18x1" rivets pinch bug.
 Rivet hammers, 4-A, 5-A, high spd.
 Rolls, bending, 40"x1", m. d.
 Saw, cold, No. 18 Wagner, 16" saw.
 Saw, cold, No. 11½ Higley, 14" saw.
 Shaper, 24" Stockb'dge, b. g. c., mod'n.
 Shaper, 24" Gould & Eberhardt.
 Shaper, 15" Kelly, sgl. grd. crank.
 Shaper, 14" Steptoe, crank.
 Shears, Quickwork No. 6, m. d.
 Shear, rotary, ½" Lennox, 8' gap.
 Straightener, No. 2 Kane & Roach.
 Testing mchs., 100,000, 200,000 lbs.
 Tumbling barrel, Globe, 18"x15".
 Turret lathes, Nos. 1 & 2 W. & S.
 Turret lathe, No. 4 Wood Tilted.
 Turret lathe, No. 1 Bardons & O.
 Turret lathe, Libby 21", motor drive.
 Valve mche., 30" Pottstown, 3-w., m. d.
 Valve tapper, 4" Pottstown, 3-w., m. d.
 Valve tapper, 4" Pottstown, 3-spdl.

SECOND-HAND MACHINERY

FOR SALE BY

Wisconsin Parts Company, **Oshkosh, Wis.**

Cold saws, 5" Nutter-Barnes, 14" blade, (2), each.....\$ 150.
 Lathe, 38" Simplex, will take 72" between centers..... 500.
 Natco No. 30 rectangular head 24x36, drilled for 48-spindles, 26 complete spindles in machine, new tapping attachment; will sell at bargain for cash or will trade.

FOR SALE BY

John F. Langan, **Kenosha, Wisconsin**

Crankshaft lathes, 26"x10' heavy duty LeBlond universal, with three-tool turret and roller back rest, less countershaft, (3), serial 4233, 3982, 3983, price each.....\$ 900.
 Shaper, 11" Gleason bevel gear, with change gears and countershafts, (3), price each..... 900.
 These machines are all in good working condition.
 Hole hog boring machine, 13D 5-spindle Moline, never used, price..... 500.
 Forging machine, 4" Ajax, price..... 1100.

FOR SALE BY

D. C. Oviatt & Co., **1100 St. Clair Ave., Cleveland, O.**
PRESSES.

Bliss Nos. 1½ & 3½B, toggle.	Toledo 34-P, 35-P, 36-P presses.
Bliss No. 2 double crank.	Toledo 55½ trimming press.
Bliss "Stiles" Nos. 3 & 4.	Toledo 59 & 59½ s. s. presses.
Bliss 27-K knuckle joint.	Toledo 202-D special double crank.
Bliss No. 62, flywheel or geared.	Toledo No. 666 knuckle joint.
Bliss 68-C & 68-N double action.	Ferracute P-4, PG-5, EG-22.
Bliss 73½, 74½, 75½ presses.	Consolidated 56, 65, 75, 165.

MISCELLANEOUS.

Automatics, Gridley 1", 1½", 1¾".	Shear, alligator, Hilles-Jones No. 2.
Bulldozers, W. & W. 2, 4, 6, 30.	Shear, Niagara 416-C slitting.
Drills, Colburn D-1, D-2, D-3.	Shear, Toledo 36"x18 ga. power.
Grinders, disc, Gardner 6 & 7.	Tapper, Garvin No. 2 automatic.
Grinder, Pratt & Whitney 14".	Tumbling barrels, 18"x30"x48".
Rivet hammers, 3A, 4A, 5A, 6½.	Turret lathes, W. & S. 4 and 6.
Shear, alligator, Canton No. 5.	Turret lathe, Libby 18".

Over 400 Machine Tools in stock. Send us your inquiries.

FOR SALE BY

The H. A. Smith Machinery Co., **Syracuse, N. Y.**

Automatic, No. 53 National Acme 4-spindle.
 Automatic No. 55 National Acme 4-spindle.
 Boring mill, 42" Gisholt, motor driven.
 Boring mill, 36" Gisholt.
 Boring mill, Rockford horizontal.
 Chucking lathe, Jones & Lamson automatic.
 Gear shaper, Fellows No. 62.
 Grinder, 6x32 Brown & Sharpe plain.
 Grinder, 10x72 Landis, plain.
 Grinder, 16x52 Landis, plain.
 Miller, Brown & Sharpe No. 13-B plain.
 Miller, Brown & Sharpe No. 5 vertical.
 Miller, Brown & Sharpe No. 3 vertical.
 Planer, 72"x54"x24' Pond, 4 heads.
 Planer, 36"x36"x24' Pond, 4 heads.
 Radial, 4' Hammond sensitive, with tapping attachment.
 Radial, 5' Fossdick full universal.
 Turret lathes, 21" Gisholt, (3).

SECOND-HAND MACHINERY

FOR SALE BY

Chas. Mollitor Machinery Co., 118-124 S. Clinton St., Chicago, Ill.

LATHES.

32"x19' New Haven, taper, older style.
26"x10' Niles, q. c. g.
24"x10' Lodge & Shipley, grd. hd.
20"x10' LeBlond heavy duty, q. c. g., taper attachment.
20"x 8' Monarch, q. c. g., dbl. g.
19"x 8' Morris, q. c. g., dbl. g., (2).
18"x 8' Walcott, q. c. g., d. b. g.
18"x 8' Sidney, q. c. g., d. b. g., (2).
18"x 8' Hamilton, q. c. g., d. b. g.

16"x10' & 16"x6' Pratt & Whitney, taper, draw, collets, relieving att.
16"x 8' Rockford, q. c. g., taper, draw collets, relieving attachment, (2).
16"x 6' Bradford, q. c. g.
16"x 8' Pratt & Whitney, q. c. g., taper, relieving attachment.
16"x 6' Walcott, q. c. g.
13"x11' Sebastian.
12"x 5' Pratt-W., taper, draw collets.
Sundstrand and Porter-Cable, (12).

MILLERS.

24" Bullard.
No. 2 Kempsmith universal.
No. 3 Kempsmith universal.
No. 1 Kempsmith plain.
No. 1 Brown & Sharpe plain.
No. 1 Rockford plain.
No. 2 Rockford universal vertical, slotting attachment.
National Transit Co. plain.
No. 3 Becker vertical (2).

No. 3H Becker vertical.
No. 4 Cincinnati, single pulley.
No. 5 Ingersoll horizontal and vertical.
Gooley & Edlund, production.
Pratt & Whitney thread miller.
24" Twin spline miller, P. & W.
Bristol, Whitney, U. S. hand.
National Acme auto. screw slotter.

RADIALS AND DRILL PRESSES.

24", 26" Aurora, Cincinnati, etc.
No. 3 Fox multiple, 16-spindle, 4".
2, 3 spdl. 24" Aveys, 1" cap. (3).

4-spindle Allen, 4".
1, 2, 3, 6 sp. Leland-Gifford, 4" cap.
Large variety 14", 16", 20" & 24".

GRINDERS.

Nos. 2 & 3 Brown & Sharpe univ.
Nos. 1 and 2 Cincinnati universal.
No. 1 Norton universal.
No. 2 Norton univ., magn. chuck.
No. 2 LeBlond universal.
10"x36" Norton cylindrical.
No. 1 Brown & Sharpe cylindrical.

O. C. Walker surface, magn. chuck.
4"x20" Norton cylindrical.
No. 11 Brown & Sharpe.
40" disc, Gardner, Bealy.
No. 23 Brown & Sharpe cylinder.
No. 65 Heald cylinder.
Heald No. 6 internal.

SCREW MACHINES AND TURRET LATHES.

Jones & Lamson dbl., sgl. spindle.
No. 2 Brown & Sharpe semi-auto.
No. 6 Foster, power long. & cross.
No. 4 Warner & Swasey.
No. 6 Warner & Swasey.
1" & 1 1/2" cap. Acme, b. g., frict. h.

Nos. 0, 1, 2, 3 Foster, Bardons & Oliver, Garvin, W. S. P. & W.
1 1/2", 1 1/4", 2" Cleveland auto.
3 1/2" capacity Acme universal.
16" & 18" Fox lathes, b. g., fric. hd.

PUNCH PRESSES AND SHEARS.

No. 6 Bliss, Stiles pattern.
No. 3 Black & Johnson (3).
No. 65 Consolidated, 5" stroke.
No. 3 Niagara inclinable.
No. 4 American, solid back.

No. 64 Consolidated double crank, 42" between housings, 4" stroke.
10' Niagara square shears, 20 ga.
1/2" capacity slitting shear.
No. 3 Overmeyer sprue cutter.

GEAR CUTTERS.

No. 13 Brown & S., bevel & spur.
Nos. 1 & 1 1/2 Standard auto., (8).

Waltham automatic, (4).
No. 10 Bilton gear hobbers, (4).

MISCELLANEOUS.

Beaders, power.
Bolt cutter, 1/2" Geometric.
Bolt cutter, 1 1/2" Acme, double head.
Bolt cutter, 3" National Acme.
Corrugating machine, steel, 7"x36".
Keyseater, No. 2 Davis.
Reducing rollers, 11"x22" Toledo, weight 20,000 lbs.

Reducing or straightening rolls, 6"x36".
Rivet spinners, Grant.
Screw presses, 24" and 30".
Shears, circle and slitting.
Shears, 60" splitting, (7).
Straightening rolls, 10"x36".
Tapping machines, all sizes.

Drill & lathe chucks, Stromberg periodograph, time clocks, time stamps, etc.
1000 different sizes emery wheels.

SECOND-HAND MACHINERY

FOR SALE BY

J. E. Haetten & Co., Inc. - 50 Church St., New York, N. Y.

Automatics, $\frac{1}{2}$ - $\frac{3}{4}$ " Cleveland model B, (40), each.....	\$ 100.
Bolt cutter, 2" standard, double head, with dies.....	400.
Boring mills, 42" Bullard, p. f., and motor.....	1500.
Boring mill, 36" Bullard r. production, serial No. 6117.....	2000.
Boring mill, 24" Bullard New Era, serial No. 10842.....	2650.
Boring mill, No. 35 Landis horizontal, floor type, like new.....	4500.
Boring mill, No. 31 Lucas, 3" bar.....	3500.
Drill, No. 00-SS Garvin horizontal, duplex, A-1.....	400.
Drill, 4" Niles semi-universal radial, like new.....	1500.
Engravers, E-3 Keller die sinker, motor attachment.....	1000.
Generator, 300 k. w., w. e., Parsons turbo, condenser, a. c.....	2000.
Generator, 75 k. w., g. e., Ames engine, 240 d. c.....	1200.
Grinder, 10x36 Norton plain, serials 3500, (9) each.....	400.
Grinder, 16x48 Landis crankpin, 98%.....	2000.
Grinder, 10x72 Norton plain, serial No. 2417.....	600.
Lathe, 34x60 Lo-Swing, 2 carriages, tools.....	350.
Lathe, 78" x 28" Putnam, triple geared, good.....	1800.
Miller, 11x40 work, surface, Lincoln type, good.....	200.
Miller, No. 4 Cincinnati plain, g. h., serial 4225-V.....	1400.
Miller, No. 5 Brown & Sharpe vertical, like new.....	750.
Miller, No. 2-M Potter & Johnston continuous.....	2000.
Miller, 54" x 20" x 20" Ingersoll, 8 heads, m. d., 98%.....	6500.
Miller, 27" x 27" x 12" Ingersoll, 2 heads on loose rail, m. d.....	2750.
Planer, 120" x 60" x 22" Niles, 3 heads, very good.....	4750.
Press, 78" Bliss tie rod, twin geared.....	2000.
Saw, 28" Newton cold saw.....	850.

FOR SALE BY

The O'Brien Machinery Co. 113 N. Third St., Philadelphia, Pa.

Boring mill, 72" Bullard vertical, 2 heads, motor drive.	Planer, 30" x 30" x 10' Whitcomb, 1 hd.
Die sinker, No. 3 Pratt & Whitney.	Pipe machines, 2", 4", 6", 8" & 12"
Die sinker, No. 2 Pratt & Whitney.	Oster, Cox, Williams, Eaton-Cole & Burnham and Jarecki makes, belt or motor driven, comp. stock.
Drill, 32" Aurora, motor driven, tapping attachment.	Planer, 36" x 36" x 12" Woodward & Powell, motor driven, 3 heads.
Drill press, 24-spdl. multiple Natco, motor driven.	Planer, 36" x 36" x 24", Bement, 4 hds.
Drill press, D-1 Colburn heavy duty.	Press, No. 54 Toledo gr. str. side.
Grinders, foundry, Norton heavy duty, (2).	Press, No. 73 1/2 Bliss trimming press, with side shear.
Hammer, 100 lb. Massillon, steam.	Presses, Nos. 18, 19 and 20 Bliss.
Hammer, 800 lbs. Bement Miles, single frame.	Punch and shear, No. 3 Hilles & J., dbl. end, motor dr.; punch end, 42" thrt., cap. 1 1/2" thru 1"; shearing end, 36" thrt., cap. 1" plate, 2 1/2" round, 7" x 1 1/2" flat, 5" x 5" x 3/4" angle.
Hammer, 1000 lbs. Billings & Spencer board drop.	Punch and shear, Pels combination; punching cap. 1" thick; shearing, 2" rd., 2 1/2" squares, 6x6x 1/2" angles.
Lathe, 22" x 11" Lehmann, geared head, taper attachment.	Radial drill, 5" Pond, motor driven.
Lathe, 22" x 12" Mueller.	Radial drill, 6" American full universal, motor driven.
Lathe, 24" x 12" Schumacher & Boye.	Shaper, 20" Queen City.
Lathe, 36" x 18" American, cone head, taper attachment.	Shapers, 12", 14", 16", 21" and 24" stroke, assorted makes.
Lathes, extension bed gap, 25" - 45" x 14" Harrington, motor driven.	Shaper, 3 Bement - Miles massive heavy duty, traveling head.
Millers, Gould & Eberhardt continuous, (2).	Shear, No. 2 Hilles & Jones guil.
Milling machine, No. 3H LeBlond univ., with vert. and slotting atts.	Turret lathe, flat, 3" x 36" Jones & L.
Milling machine, Newton combination circular milling machine and saw for structural work.	Turret lathe, No. 6 1/2 Hardons & Oliver, 2 1/2" w. f. cap., cabinet base.
Planer, 36" x 16" Cleveland open-side, 2 heads.	

SECOND-HAND MACHINERY

FOR SALE BY

Niles-Bement-Pond Company,

111 Broadway, New York

Located at our various factories

NOTE—All Motor-Driven Machines are for 220 volts, direct current.
PLANERS.

24"x24"x 6' Powell, 1 head.
24"x24"x 6' Whitcomb, 1 head.
24"x24"x 8' Whitcomb, 1 head.
24"x24"x10' Whitcomb, 1 head.
26"x26"x 6' Gray, 1 head.
30"x30"x 6' Pond, 2 heads.
30"x30"x 8' Pond, 2 hds., rev. motor.
30"x30"x12' Pond, 2 hds., rev. motor.
32"x32"x10' Niles, 2 heads.
36"x36"x10' Niles, 4 heads.
36"x36"x12' Pond, 4 heads, rev. mtr.
36"x36"x16' Pond, 4 heads, rev. mtr.
38"x38"x10' Niles, 2 heads.

42"x42"x12' Niles, 4 heads.
42"x42"x14' Pond, 3 heads.
42"x42"x26' Pond, 4 heads, rev. mtr.
48"x48"x16' Pond, 4 heads, rev. mtr.
50"x36"x22' Pond, 4 heads, rev. mtr.
52"x36"x10' Pond, 4 heads, rev. mtr.
54"x54"x22' Pond, 4 heads, rev. mtr.
60"x60"x20' Niles, 3 heads.
60"x60"x24' Niles, 4 heads.
72"x72"x32' Ridgway, 4 heads.
120"x120"x36' Betts, 4 heads, motor drive thru belts.

DRILLING MACHINES.

3 1/2' Morris radial.
5' Niles radial, motor driven.
6' Pond radial, motor driven.

6' Niles univ. radial, motor driven.
6' Niles semi-univ. radial, mtr. driv.
8' Pond radial, motor driven.

LATHES

16"x 8' Morris.
17"x 8' LeBlond, motor drive.
18"x 8' Morris.
18"x10' Morris.
21"x 8' LeBlond, motor drive.
22"x10' & 22"x12' Morris.
25"x10' LeBlond, motor drive.
26"x10' Pond, motor drive.
26"x36' Pond, qk. ch., dbl. bk. grd.
30"x14' Pond, quick change.
30"x25' Niles lathe.

30"x23' Pond, qk. ch., motor drive.
36"x12' Pond, triple grd., motor dr.
36"x17' Pond, triple grd., motor dr.
42" Pond forge lathe, motor driven.
60"x26' Niles, cone head.
72"x21' Pond, motor drive.
8"x42" Pratt & W. turret lathe.
1"x15" Pratt & W. turret lathe.
24"x26" Pratt & W. turret lathe.
3"x36" Pratt & W. turret lathe.
28" Pond rigid turret lathe.

SHAPERS AND SLOTTERS.

16" Stockbridge shaper.
26" Worcester crank shaper.

15" Bement slotter, motor driven.
18" Bement slotter, motor driven.

MILLING MACHINES.

No. 10 Pratt & W. hand miller,
No. 3 Brown & Sharpe plain, motor driven.
No. 3 Cincinnati universal.
No. 5 Brown & Sharpe plain.
48"x48"x14' Bement slab miller, motor driven.

Size C Becker vertical.
No. 3 Cincinnati vertical miller.
No. 5 Brown & Sharpe vertical.
No. 13 Pratt & W. Lincoln miller.
6"x48" Pratt & W. thread miller.
6"x80" Pratt & W. thread miller.
6"x132" Pratt & W. thread miller.

GEAR CUTTERS.

No. 3 Newark gear cutter
No. 3 Brown & Sharpe spur.
No. 4 Brown & Sharpe spur.

No. 4 Newark spur.
5-A Lees-Bradner gear hobbing machine.

VERTICAL BORING MACHINES.

36"-44" Niles side hd. mill, motor dr. | 10' Niles boring & turn'g mill, m. d.

HORIZONTAL BORING MACHINES.

40" Morris, horizontal boring and drilling machine, 2" bar.
60" Bement horizontal boring and drilling machine, 2 1/2" bar.
66" Bement horizontal boring and drilling machine, 4 1/2" bar.
80" Bement horizontal boring and drilling machine, 5 1/2" bar, motor driven.
60" Bement duplex control boring machine, 4" bar, motor driven.
Pond floor drill, 3" bar.
Niles boring, drilling and milling machine, 5" bar, motor driven.

MISCELLANEOUS.

Centering machine, 4" P. & W.
Grinder, 4"x30" P. & W.
Pipe machine, 2" Cox, motor driven.

Punch, No. 3 L. & A. horiz., 3" in 3".
Punch No. 2 L. & A. 48" thr., 1" in 1".
No. D L & A. dble. 36" thr., 3" in 1 1/2".

CRANES AND HOISTS.

Electric Traveling Cranes, 220 Volts, Direct Current.
3-ton crane, 20' 2 1/2" span.

SECOND-HAND MACHINERY

FOR SALE BY

M. A. Wertman,	505 Superior Bldg., Cleveland, Ohio
Blue print machine, 42" Peas auto.	Lathe, 20"x10" American hvy. duty.
Drill, 24" Aurora, m. d., tapping att.	Lathe, 18"x10" Bradford, grd. hd.
Drill, 5-spindle Detroit semi-auto.	Milling mche., No. 3 Cincinnati h.p.
Grinder, 24" Ingersoll cutter.	Press, No. 58 1/2 Toledo, near new.
Grinder, No. 1 W. & M. surface.	Swager, 4" Etna.

FOR SALE BY

The Washburn Company,	6126 S. LaSalle St., Chicago, Ill.
Air compressor, 10x8 Ingersoll, serial No. 13931, with 36x72 tank,.....	Lathe, speed,.....
Blower, Garden City, 15" fan, brand new,.....	Miller, No. 8 Kempsmith,.....
Converter, d. c. & a. c., 10 k. v. a., 220 volt,.....	Miller, B. & S., Lincoln type,.....
Cyanide furnace, Gilbert & Barker E-6,.....	Polishing machines, Hanson Van W., with c. s., each.....
Drill presses, bench, (3), each... 10.	Press, foot,.....
Drill presses, 2-sp. bench (2) ea. 25.	Shaper, 16" Gould & Eberhardt,.....
Drill press, upright,..... 25.	Shear, alligator, opening of jaws 1 1/2" length of jaws 5 1/2".....
Emery wh. stand, 4", 2-spd. cone,..... 25.	Swaging mch., No. 2 Goodyear,.....
Grinder, No. 1 Besly disc,..... 35.	Swaging machine, Dayton type, jaws 3 1/2"x1 1/2".....
Generator, Kester Electric, 5-10 volts, 1,000 amp., d. c.,..... 175.	Swaging machine, Dayton type, jaws 1 1/2"x1 1/2".....
Hack saw, power,..... 20.	Time clock, Day time register,.....
Hammers, 100 lb. poppet rope (2), each..... 100.	Turret lathe, small size,.....
	Turret lathe, Garvin, 12" swing,.....
	Turret lathe, b. g., p. f.,.....
	Turret lathe, W. & S. No. 4,.....

FOR SALE BY

Brown Machinery Co.,	2323 N. 9th St., St. Louis, Mo.
Brake, 6" D. & K.,.....	80.
Buffing lathe, Hisey 3 h. p. electric, a. c.,.....	100.
Buffing lathe, U. S. 3 h. p. electric, a. c.,.....	125.
Drill, Baush No. 3 multiple, cap. 30 spds., rectangular hd. 20x40". Price.....	1500.
Drills, radial, 3' American and Mueller; each.....	750.
Drill, radial, horizontal, No. 1 Barnes, d. c.,.....	350.
Grinder, cylinder, No. 60 Heald.....	850.
Grinder, No. 14 Gardner, b. b., disk, dry, 20" disks, good cond. Price.....	400.
Grinder, No. 6 Besly two-spindle disk, 20" disks. Price.....	350.
Grinders, three No. 2 Gardner single spindle, double disk, with universal tables; good condition. Price, each.....	175.
Grinder, No. 2 American surface,.....	375.
Grinder, Bath universal,.....	750.
Grinder, LaSalle automatic surface, good condition. Price.....	275.
Grinder, No. 12 B. & S. 8x36" pl., for wet grinding; good condition. Price.....	450.
Grinder, No. 1 Brown & Sharpe universal, 10x24; good condition. Price.....	375.
Grinder, No. 14 Besly single spindle ring wheel. Price.....	400.
Hammer, size A United, motor driven,.....	
Lathes, 16"x6" Monarch, heavy duty, each.....	375.
Lathes, 17"x6" Cincinnati, each.....	275.
Lathe, 18"x10" Mueller, geared head, motor driven, a. c.,.....	900.
Miller, No. 1B Fox, hand & pwr. fd., 18x6x14; new, never used. Price.....	400.
Polishers and buffers, drop head, New Britain, each.....	50.
Punch & stake riveter, No. 3 Hilles & Jones 60" throat, rapid action; cap. full depth throat 1 1/2" in 7/16"; 16,000 lbs.; two stakes. Price.....	1500.
Shear, Niagara 8', 18 ga., foot power, square, splendid condition. Price.....	275.
Shear, Marshalltown No. 134 rotary splitting, cap. 1/4" plate; 4' throat; arranged for motor drive. Like new. Price.....	750.

Many other bargains. Write for List No. 124.

SECOND-HAND MACHINERY

FOR SALE BY

Herman L. Winterer,

**943-53 N. Front St., Philadelphia, Pa.
LATHES.**

43"x17' 44" Bement-Miles.
37 1/2"x14' Johnson d. b. g., q. c. f., t. a.
32"x12' Pittsburgh, heavy duty, q. c. g.
27"x12' Bullard.
26"x11' Wickes, q. c. g.
28"x10' Niles, q. c. g.,
25"x14' Hendey, q. c. g., taper attach-
ment, oil pan, (3).
24"x14' Porter.
21 1/2"x8' LeBlond.

20"x8' 6" Walcott, d. b. g., c. g., (2).
20"x8' Whitcomb Blaisdell, q. c. g.
19"x10' Draper, patent head.
18"x8' Davis, q. c., d. b. g.
18"x7' Chard, d. b. g., semi q. c. g.
18"x8' to 8' lathes, (6).
16"x8' Greaves & Klusman, b. g., t. a.
14"x8' Filsmith, q. c. g.
14-22"x6' Barnes extension gap.
And many others.

TURRET LATHES.

3 1/2"x28" Pond, triangle.
3x36" Pratt & Whitney, hollow hex.
20x7' 6" Pratt & Whitney, back grd.
20x7' Bridgeport, 2 1/2" h. s.
19"x7' Fay & Scott, back grd.
No. 22 1/2' Garvin Monitor.

No. 3 Kempsmith.
14"x6' Warner & Swasey.
16"x6' Johnson, back grd.
No. 3 Bardons & Oliver back grd.
14 1/2"x5' 3" Pratt & Whitney, (2).
No. 3 Foster Kimball.

DRILL PRESSES.

42" Gang radial, s. p. speed box.
40" Barnes horizontal radials, (2).
36" Bickford radial, circular base,
motor driven.
36" Fosdick radial, tapping att.
34" Barnes, s. h., geared face, comp.
table.
28" Rockford, q. c. g. feed, (2).

24" Sibley & Ware, sliding head.
24" Aurora, sliding head.
20" Champion, stationary head.
20" Excelsior, stationary head, (2).
Henry & Wright sensitive.
Plain drills, all sizes.
Drill presses, assorted sizes.

MILLING MACHINES.

No. 5 Cincinnati, table 9 1/2'x50 1/2".
No. 15 Garvin, table 12'x42".
No. 3 Becker Brainard, table 12'x40".
No. 3 Becker-Brainard, new model,
q. c. g., vertical attachment.

No. 3 Hendey-Norton, q. c. g.
No. 5-C Becker vert., rotary table.
No. 5-B Becker vert., table 14'x43".
No. 1 Milwaukee plain.

PLANERS AND SHAPERS.

12'x10'x25' Sellers planer, 4 heads.
30"x30"x8' Hewes & Phillips planer.
30"x30"x8' Putnam planer.
48" Morton draw-cut shaper.

39" Pedrick & Ayer, open side.
15" Lodge & Davis shaper.
14" Warren shaper.

MISCELLANEOUS.

Boring mill, car wheel, 60" Newton.
Boring, drilling and milling machine,
17 1/2' Bement Niles horizontal.
Boring mill, No. 1 Sellers, horizon-
tal, 23" bar.
Boring mill, No. 3 Binsse, horizon-
tal, 24" bar.
Grinder, 13 1/2"x5' Landis universal.
Grinder, No. 1 Brown & Sharpe univ.
Grinder, disc, No. 17 Besly.
Hammer, 15 lb. Bradley helve.
Hammer, 25 lb. Little Giant, m. d.
Hammer, 40 lb. Bradley, helve.
Hammer, 60 lb. Hotchkiss.
Hammers, 60 lb. Bellefonte upright; 2
Hammer, 500 lb. Merrill board drop.
Hammer, 750 lb. Merrill board drop.
Molding machine, 24" Taber, with
roll over.

Keyseater, 18" stroke Morton.
Punch presses, all sizes, (55).
Punch, multiple, No. 5 H. & J.,
gate pat., 86".
Punch & shear, No. 2 H. & J., dbl.
end, 20" th. cap., 1 1/2" in 1".
Punch, No. 2 H. & J., 15" th., arch.
jaw, 1 1/2" in 1".
Punch, single end, 31" th., arch.
jaw, cap. 1" in 1".
Punch, horiz., L. V., grd., cap. 1".
Punch & shear, Industrial Wks. d. e.,
capacity 1" in 1"; shearing 1" x 6".
Riveter, air, 6" gap Allen, cap. 1 1/2".
Riveter, air, 25" gap Allen, cap. 1".
Slotter, 14" Niles.
Tooth rounding mche., Schuchardt
& Schutte.

Large assortment of General Machinery. Send for Complete Price List.

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won't you kindly say that you saw it in Hitchcock's? Thank you.

SECOND-HAND MACHINERY

FOR SALE BY

Surplus Material & Machinery Co., 8735 Kercheval, Detroit, Mich.

Grinders, No. 11 B. & S.
Grinders, 6x32 Norton.
Grinders, 12x42 Landis.

Lathe, 24" Davis, turret.
Lathe, 20" Millholland, turret.
Lathe, 16"x8" LeBlond, q. c.

FOR SALE BY

Brownell Machinery Co., 150 Pine St., Providence, R. I.

BORING MILLS.

24" Bullard rapid production.
30" Baush vertical.
No. 10 Beaman & Smith horiz. boring and milling machines, 34"

No. 14 Beaman & Smith horizontal drilling, tapping, boring and milling machine, 34".

DRILLING MACHINES.

25" Weigel, sliding head.
23" Snyder, stationary head.
4-spindle Dwight Slate, power feed.
5-spd. Henry & Wright, class "K".

3-spindle Cincinnati.
No. 34-A Demco 4-spindle bench.
No. 1 Langelier, h. s., b. b.
No. 2 Langelier, h. s., b. b.

GRINDERS.

No. 1 Norton tool & cutter.
No. 2 Norton tool & cutter.
No. 2 Brown & S. tool & cutter.
Wells cutter & reamer.

Mummert-Dixon oil stone.
20" Diamond wet tool.
No. 12 B. & S. plain cylindrical 8x36.
No. 1 B. & S. universal 10x4.

METAL CUTTING MACHINES.

No. 7K Atkins Kwik Kut, 8x8.
13"x16" Peerless power hack saw.

No. 1 Burr cold saw.
No. 2 Burr cold saw.

LATHES.

10"x40" Johnson.
15"x 6" Flather.
16"x 8" Sidney.

20"x 8" Roulsted.
24"x16" Reed, taper.
12"x 5" Reed plain turning.

MILLING MACHINES.

No. 134 Garvin plain b. g.
No. 15 Garvin plain b. g.
No. 4 Cincinnati plain, geared drive.
Beaman & Smith No. 2 combined vertical and horizontal spindle.

No. 1 Kempsmith universal.
No. 4B Becker vertical.
Type A Briggs manufacturing.
Thurston die miller.
No. 6 Whitney hand miller.

PLANERS AND SHAPERS.

48"x72"x20' Gray, spiral gear, 4 hds.
48"x48"x16' Gray, spiral gear, 4 hds.
36"x36"x14' Gray, spiral gear, 4 hds.
30"x30"x 8' Bement-Miles, two hds.
26"x30"x14' Whitcomb second belt drive, two heads.

24"x24"x 6' Powell, one head.
22"x22"x 5' Whitcomb, one head.
17"x17"x 4' Whitcomb, spur gear.
17"x20"x 4' White's, second belt, 1 hd.
15" Potter & J. tool room shaper.
24" Potter & J. tool room shaper.

PRESSES.

No. 24 Atlas arbor press.
No. 1 Standard, power screw.
McWilliams double acting, with roll feed.

400-ton Robertson hydraulic.
100 lb Standard, plain drop.
Bosworth foot presses.
No. 2A Adams hand screw press.

TURRET MACHINERY.

2x24 Jones & Lamson flat turret.
3x36 Jones & Lamson flat turret.
No. 2 Southworth.

14x18 Pratt & Whitney b. g., p. f.
No. 2P P. & J. piston & piston ring.
Model B Cleveland full auto., 8" & 8".

MISCELLANEOUS.

Gear cutter, No. 3 B. & S. 26".
Gear cutter, No. 13 B. & S. 18x4.
Marking machine, Martin, hand.
Pump, Deane vertical triplex 4"x6".
Pump, Deming 3-plunger, 250 v., a.c.
Rolling mill, 3x5 Willets.

Shaft straightener, 14" Rockford.
Slotter, 12" Bement-Miles.
Tapping machine, No. 2 Garvin vertical.
Vises, No. 14 Garvin swivel base milling machine, new.

WOOD-WORKING MACHINERY.

Band saw, 26" Crescent.
Band saw, 30" Crescent.
Lathe, 20x8 Fay & S. patternmaker's.
Fig saw, No. 1 Beach.
Jointer, 16" Sidney.

Saw table, No. 650 Dover.
Saw table, No. 2 Crescent, with boring attachment.
Saw table, Rollston double arbor.
Trimmer, No. 1 American univ.

SECOND-HAND MACHINERY

FOR SALE BY

J. L. Lucas & Son, Inc., - **No. 3 Fox St., Bridgeport, Conn.**

AUTOMATIC SCREW MACHINES.

Seven No. 00 Brown & Sharpe full automatic screw machines, with six-hole turrets, rebuilt and complete, f. o. b. Bridgeport, \$600. each.

FOR SALE BY

A. F. Strafer, - **30 Church St., New York City**

BORING MILLS, VERTICAL AND HORIZONTAL.

12" Betts, geared feed, belt drive.	54" Bullard, rapid traverse.
24" Bullard, v. t. l., New Era type.	51" & 42" Bullard, s. p. drive.
36" Bullard, side head, v. t. l.	Horizontal Bement-Miles No. 8, 6' spindle.
65" Gisholt rapid traverse, b. d.	Horizontal Betts, 4" bar, knee type.
12" Betts, heavy modern, m. d.	Horizontal No. 35 Rochester, 3" bar, floor type.
72" Gisholt, rapid traverse, m. d.	
30" King, single turret head.	

DRILLS, UPRIGHT AND RADIAL.

6'-Mueller plain, d. c. motor drive.	4' Dreses, univ., s. p. d.
7' 6" & 5' Baush, belt drive.	310 Baker, 2½ capacity, s. p. d.
6' Cincinnati Bickford, full univ.	21" Barnes, s. h., b. g., p. f.
D-3 Colburn heavy duty, s. p. d.	32" Snider upright, belt drive.

GRINDERS

No. 16 Blanchard, a. c. motor drive.	10"x24" Landis universal.
No. 60 Heald cylinder, low price.	3"x18" Norton plain.
10"x36" Norton plain.	No. 11 Brown & Sharpe, 6"x32".
10"x24" Landis plain, self contained.	No. 3 B. & S. tool cutter.

GEAR CUTTERS.

36"x16" Newark, heavy duty.	24" Bilton automatic.
24"x8" G. & E., vertical type.	60"x11" Brown & Sharpe No. 5.

LATHES

50"x36" Bement-Miles, t. g.	60"x16" New Haven, t. g.
50"x16" Fifield, belt drive.	24"x10" R. K. LeBlond, taper att.
50"x30" Pittsburgh, h. d., q. c.	21"x10" LeBlond, heavy duty.
44"x21" Niles-Bement-Pond, t. g.	27"x10" LeBlond, turret on shear.

TURRET LATHES.

3½"x36" Acme, flat, modern, geared head, chuck equipment.	3½"x36" Jones & Lamson, bar equipment, high ser.
18" Libbey, s. p. d., rapid traverse.	24"x26" Greenlee, like new, cheap.
24" Gisholt, motor drive.	No. 6 Brown & Sharpe.
28" Gisholt, fine condition.	

MILLING MACHINES.

No. 4 Cincinnati plain, cone type.	13-B Brown & Sharpe, mfg. type.
No. 3 Kempsmith univ., cone.	No. 5-B Becker, rotary table.
No. 2 Brown & Sharpe plain.	No. 3 Cincinnati vert., high power.
No. 3 Brown & Sharpe plain, cone.	U. S. Mfg. Co. hand miller.

PLANERS.

12"x25'-4 h., belt drive (stone).	54"x16" Wm. Sellers, 4 heads, b. d.
30"x8' D. & H. open side, 2 heads.	50"x50"x20" Wm. Sellers, 3 heads.
24"x24"x12' American, 2 heads.	24"x24"x6' Gray, 1 head.

PUNCHES AND SHEARS.

No. 1 Hilles & Jones, 17" throat.	No. 6 Quickwork, ½" capacity.
No. 6 Hilles & Jones, 42" throat.	No. 10 Quickwork, 60" t., cap. 14 ga.
No. 4 Hilles & Jones, double, 48" throat, motor drive.	Pells triple combination, cap. 1½".
No. 4A Quickwork rotary, m. d.	Quickwork ½" cap. slitting & beading.
	Lennox rotary, 44" throat, ½" cap.

MISCELLANEOUS.

Bending rolls, ½"x20" Niles-B.-P.	Fire pump, 1000 gal. Knowles, stm.
Bending rolls, ½"x7" Wm. Sellers.	Flanging clamp, 96".
Bending rolls, ½"x10' 6" Southworth.	Forging mche., Ajax 1½" steel bed.
Broaching machine, Nos. 2 & 3 LaPointe.	Hammer, 9" McDougal & Potter.
Crane, 50-ton, 86' spar, P. & H., d. c.	Hammer, No. 4, type "1", Nazel.
Drill chucks, 1" capacity, new.	Surface plates, B. & S. 12"x18".
	Tapping attach., Errington 1" cap.

SECOND-HAND MACHINERY

FOR SALE BY

Cincinnati Machinery & Supply Co., 215 E. Pearl St., Cincinnati, O.

SHAPERS.

12" Juengst, complete, \$175.
16" Cincinnati crank shaper.
20" American crank shaper.

26" Ohio crank shaper.
28" Gould & Eberhardt, crank.
20" Steptoe crank shaper, \$275.

MILLING MACHINES.

No. 1 U. S. hand millers, (5).
No. 2 Cincinnati plain, \$285.
No. 3 Brown & Sharpe plain.

No. 4 Brown & Sharpe plain.
No. 3 Cincinnati vert., high power'd.

LATHES.

14"x 6' LeBlond, q. c.
14"x 6' Lodge & Shipley, q. c.
16"x 6' Reed, geared head, q. c.
18"x 8' Monarch, \$325.

20"x10' Lodge & Shipley, q. c.
27"x18' Lodge & Shipley, q. c.
32"x16' Schumacher & Boye, q. c.

PLANERS.

24"x24"x 8' Gray, \$550.
26"x26"x 8' Gray.

30"x30"x20' Hamilton.
48"x48"x14' Gray.

GRINDERS.

No. 60 Heald cylinder grinders.
10"x20 Landis.

10"x30 Landis.
No. 2 Brown & Sharpe universal.

RADIALS.

3' Bickford, cone drive.
3' Prentice, sgl. pulley, gear box.

2 1/2' Gang, single pulley.
5' American.

Complete stock of machinery and supplies, new and used.

Write us your needs.

FOR SALE BY

Peninsular Machinery Co., 429-31 E. Jefferson Ave., Detroit, Mich.

LATHES.

13"x 5' Champion, l. c. g.
13"x 5' Blount speed lathe.
13"x 5' South Bend, (2).
13"x 6' Willard, (3).
13"x 6' Sebastian, (4).
14"x 6' Carroll-Jamieson, (2).
14"x 6' Reed, l. c. g., (2).
15"x 6' South Bend.

16"x 8' Bradford, l. c. g.
16"x 8' LeBlond, quick change.
17"x8' LeBlond rapid product'n, m. d.
21"x11' LeBlond, all geared, (2).
21"x12' LeBlond line bearing, (3).
26"x10' LeBlond crankshaft.
34"x36 Lo-Swing.

DRILLING MACHINES.

3-spdl. Henry & Wright, h. s., b. b.
2 1/2" Sibley all-geared, p. f., with tap.
2 1/2" Sibley all-geared, p. f.

28" Barnes, s. h., taper.
No. 3 Baush multiple.

MILLING MACHINES.

Briggs type A, (3).
No. 12 Brown & Sharpe.
No. 32 Kempsmith.

No. 33 Kempsmith plain.
No. 3H LeBlond plain, cone type.
No. 2 LeBlond all geared plain.

TURRET SCREW MACHINES.

1 1/2" Defiance, f. h.
2" Milholland, f. h.

2 1/2"x26 Pratt & Whitney, a. c.
No. 3 Foster f. h. turret lathes, (2).

GRINDERS AND POLISERS.

No. 24 Gardner vertical.
No. 70 Heald internal.
No. 50 Heald cylinder.
20" Blount wet grinders.
No. 15 Bryant, motor drive.

No. 26 Besly, double spindle, m. d.
No. 4 Webster & Perks polishing.
Bennett & O'Connell dbl. sp. pol.
No. 23-B Valley City disc.

MISCELLANEOUS.

Band saw, 6" Napier.
Centers, bench, Brown & Sharpe, (3).
Cutting-off mchs., 4" Hurlbut-R., (2).
Filer, No. 2 Cochrane & Bly.
Gear cutter, No. 13 B. & S., bevel.
Gear generator, 6" Gleason, bevel.
Gear generator, 18" Gleason, bevel.
Gear hobber, No. 4 Farwell auto.

Gear tester, bevel, Gleason.
Hammer, drop, No. 5 Williams-W.
Lapping mchs., Bethel-Player, (3).
Metal cutter, No. 1 Gray.
Screw slotter, No. 1 National Acme.
Tooth round's, 12" Rochester aut. (2).
Tumbling barrels, No. 3-S Globe, (2).

SECOND-HAND MACHINERY

FOR SALE BY

Clark Machinery Co., 1235-45 St. Clair Ave., Cleveland, O.

Bolt cutters, 4-sp. Webster & Perks.
Bolt threaders, $\frac{3}{8}$ " Nat'l Acme 2 sp.
Boring mill, No. 2 Rockford.
Chucking grinders, No. 6 Bryant.
Gear cutter, Sloan & Chase.
Gear cutters, Meiselbach.

Grinders, Pratt & Whitney plain.
Planer, 42"x42"x10' Gray, 2 heads.
Radial drill, Henry & Wright h. s.
Radial grinder, Rivett.
Thread miller, Milled Screw Co.
Turrets, P. & J. 5A & 6A.

FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

ENGINE LATHES.

14"x 6' LeBlond, l. c. g. and chuck.
14"x 6' Hamilton.
14"x 8' Monarch, c. r., stand. pattern.
15"x 6' South Bend, c. r., complete.
16"x 6' South Bend, c. r., complete.
16"x 8' Lodge & Shipley, old style,
c. r., q. c. g.

18"x 8' American, 3-step cone, d. b.
g., q. c. g.
18"x 8' Prentice c. r., l. c. g., chuck.
18"x 8' Schumacher-Boye & Emmes,
c. r., 5 step cone, s. b. g., q. c. g.
18"x10' Star, 4-s. c., s. g., with 16"
4-jaw ind. chuck.

TURRET LATHES AND SCREW MACHINES.

No. 2-A W. & S. g. h. tur. lathes.
No. 3-A W. & S. g. h. turret lathe.
25" Gisholt heavy duty turret lathe.
2"x24" Jones & L. g. h. flat turret.
No. 00 Brown & Sharpe auto., (6).
No. 0 Brown & Sharpe auto. (2).
No. 2 Brown & Sharpe auto. (2).
No. 4 W. & S., p. h., a. c. & b. f.

No. 2 Warner & S. p. h. screw mche.,
a. c. & b. f., p. f. to turret.
No. 2 W. & S., p. h., a. c. and b. f.
No. 4 Warner & S., g. f. h., a. c. and
b. f.
18" Libby, factory rebuilt.
No. 2-G B. & S. automatics (3).
No. 2 B. & S. turret forming (2).

DRILLING MACHINES.

22" Cincinnati, sliding head, friction
back geared, power feed.
24" W. F. & J. Barnes, sliding head,
back geared and power feed.
24" Baker heavy duty.
No. 2-D Minster heavy duty, plain
table, with pump.
No. 2-D Minster heavy duty, with
compound table, with pump.
4-spindle Leland-Gifford, h. s., b. b.,
with p. f. to each spindle.
2 1/2" Mueller plain radial with t. a.

6' arm Western radial, with tap. att.,
arranged for motor drive.
20" Hamilton, w. and l.
20" W. F. & John Barnes, stationary
head, p. l. f.
12" Mechanics, friction driven.
6-sp. 12" Leland-G., h. s., b. b. (6).
12" 3-sp. Leland-G., h. s., b. b. (2).
14" 4-sp. Leland-G., h. s., b. b. (2).
14" 2-spdl. Avey, h. s., b. b., (2).
14" 3-spdl. Henry & W., h. s., b. b.
14" 4-spdl. Henry & W., h. s., b. b.

MILLING MACHINES.

No. 0 Bickett, hand, bench type (3).
Toledo hand milling machines (2).
No. 2-B B. & S. plain, constant s. dr.
No. 1 1/2 Rockford plain, with div. hd.

No. 2 Brown & Sharpe univ., with
vert. and rack cutting attachment.
No. 24 Ohio plain b. g. complete.
No. 1-Y Brown & Sharpe plain.

GRINDERS.

No. 10 B. & S. plain, (2).
No. 6-A Bryant internal.
No. 2 B. & S. surface.
No. 3 Brown & Sharpe universal.
LaSalle combination pl. and surface.

No. 1 LeBlond cutter grinder.
Type "DE" Hisey-Wolf internal.
No. 11 B. & S. plain grinders, (2).
Plain emery wh'l stand with column.

SHAPERS AND PLANERS.

16" Hendey friction, (2).
16" Ohio plain crank.
18" Walcott plain crank.

22"x22"x 8' Putnam planers (3).
24"x24"x 6' Gray planer.

METAL CUTTING TOOLS AND SQUARING SHEARS.

Higley cold saw.

3" new Davis cutting-off machine.

GEAR CUTTERS AND HOBBERS.

26" & 36" No. 3 Brown & S. auto.
No. 18 G. & E. vert., for spur & spiral.
No. 3 Barber-Colman.

No. 13 Brown & Sharpe auto.
No. 12 B. & S., bevel, (2).

HAMMERS.

Quickwork body hammer.

SECOND-HAND MACHINERY

FOR SALE BY

Foster Machinery Company,	10203 Quincy Ave., Cleveland, O.
Angle shear, No. 2 Cleveland, 4x4x1/2" angle.	Miller, No. 2 Cincinnati universal.
Bolt cutter, 1 1/2" Acme.	Planer, 36" x 36" x 10' Whitcomb, 2 heads.
Grinder, Greenard, tool & cutter.	Press, No. 1 Consolidated.
Grinder stand, Western No. 4, two 14" wheels.	Riveter, Hanna, 24" throat, 15" gap, 1/2" rivet.
Lathe, 12"x4" Wells, speed.	Rivet hammers, No. 2-A, No. 4-A.
Lathe, 18"x8" Lodge & Shipley.	Shapers, 16" G. & E., (2).
Miller, No. 00 Brown & S., hand.	Shaper, 16" Kelley.
Miller, No. 00 Owen, Fox type.	Shaper, 20" Gould & Eberhardt.
	SQUARING SHEARS.
Geo. A. Ohl, 8', 3/16" capacity, power.	No. 210-A Pexto, power.

FOR SALE BY

Tubor, Velick & Co., Inc., - - 628-630 W. Lake St., Chicago, Ill.
Telephones: Monroe 4199-6813. No Branches

PUNCH PRESSES.

No. 3 Walsh.	No. 15 Torris Wold.
No. 4 American Can.	Perkins punch presses, 1/2" str. (20).
No. 7 Beatty, cap. 1 1/2" in 1".	Nos. 13 & 15 single end punches.
Bliss Nos. 19 and 19 1/2.	Long & Allstatter horn punch, capacity 1 1/2xl.
Consolidated No. 14.	

DRILL PRESSES.

14" Excelsior.	Demco high-speed drills.
20" b. g., p. f., new, \$130.	Bench type drills.
20" drill presses (40), each \$40.	3 1/2" Hilbert radial.
26" Weigel.	3 1/2" Canedy-Otto radial.
30" Reed-Prentice.	

MILLING MACHINES.

No. 2 LeBlond.	No. 3 Kempsmith.
No. 2 Cincinnati universal.	A number of hand millers.

LATHES.

16"x 6' Sidney, 2 chucks & collets.	20"x 8' Lodge & Shipley, geared head, s. p. drive.
16"x 6' Sidney, q. c., (2).	23"x10' Sidney.
16"x 6' Monarch q. c.	26"x12' Prentice.
16"x 6 1/2' Canedy-Otto.	
24"x10' Canadian, q. c., d. b. g., (3).	

PLANERS.

24"x24"x 8' Putnam.	36"x36"x 7' Flather, 2 heads.
30"x30"x 8' Fitchburg.	

SCREW MACHINES.

No. 2 Smith, hand.	No. 2 & No. 3 Foster.
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GRINDERS.

Bath universal, with magnetic chk.	No. 14 Besly, disc.
No. 2 Manhattan surface.	Emery grinders, #2 and up.
Gardner No. 6 disc grinder.	

WOOD-WORKING MACHINERY.

Band saws, 36" Famous, new, (10).	Saw table and jointer combined, portable.
Boring mills, Andrew, (3).	Shapers, double spindle, Whitney and Fay.
Glue jointer, Falls.	Swing saws, Porter, (4).
Jointers, 4" D. C. Wallace.	
Planer, 30" Berlin.	

MISCELLANEOUS.

Buffers, U. S. and Westinghouse, 5 h. p., b. b.	Saw mandrels, \$3.
Hack saws.	Shaper, 24" Kelly.
Lockers, steel, single and double.	Thread hobber, Pratt & Whitney.
Motors, a. c. and d. c.	Time clocks, International.
Paper cutter, 57" Oswego, & 5 h. p., 3-ph. motor, fully automatic.	Trucks—1,000 factory trucks.
Leather belting.	Woodworking machines.
Pulleys, shafting and hangers.	

SECOND-HAND MACHINERY

FOR SALE BY

McDonald Machinery Co.,

1531-33 N. Broadway, St. Louis, Mo.

Clock, electric time system.
Demagnetizer, Walker.
Drills, Lel. Gif. 1-2-3 sp., h. s., b. b.
Drill, Detroit 5-sp. horiz.
Drill, Rockford horiz. boring & drill.
Furnace, Holcroft 92 k.w. annealing.
Lathes, Davis 22" x 10", Bridgeford
27x9, Walcott 18x8, q. c.
Milling machines, Hendey No. 2G
univ.; LeBlond No. 4 heavy plain;
Ohio No. 20 pl.; 1 Knight vert mill
& drill; Becker "SD" vert, rotary
table, 17200 lbs.; Ohio No. 42 plain.
Saw, Nutter Barnes 6" cold.

Planers, Sellers 36" x 36" x 23', 2 heads;
Pond 42" x 42" x 16', 2 heads.
Punch presses, Consolidated No. 67
geared, wt. 30,000; Ferracute No. 2,
straight back; Swaine No. 40 arch.
Punches, Felber 1" in 1", and Slitt
shear; Scully, 20" throat, 1" in 1";
Shaper, 26" open side planing; 15"
Smith & Mills; 15" Kelly; 16"
Milwaukee, b. g.; 7" Rhodes.
Shears, 60" thrt. rotary slitting. (2).
Torches, 50 vapor blast heat, new.
Welders, 20 k. w. spot. Toledo, (2).
Welders, butt, Federal, 1" rds.

FOR SALE BY

Hill, Clarke & Co., Inc.,

156 Oliver St., Boston 9, Mass.

Machinery Bargains BORING MACHINES.

Lucas horizontal, 3" bar, single pulley drive.

BALL BEARING SENSITIVE DRILLS.

Leland 2 and 4 spindles.

UPRIGHT

Allen 2, 3 and 5 spindles.

Aurora 24".

Barnes 20", 22" and 25".

Hoefer 24".

DRILLS.

Prentice 25", 28" and 32".

Snyder 20" and 25".

RIVETERS.

Harvey Hubbell, 1/2" and 3/16" capacity.

GEAR CUTTERS AND HOBBSERS.

Barber-Colman No. 2 hobber.

Becker-Brainard 18", 24" & 36" auto. gear cutters, for spur, bevel and worms.

LATHES.

13" to 30" including F. E. Reed, LeBlond, Greaves-Klusman, Robbins,
Flather, Seneca Falls, etc.

PLAIN MILLING MACHINES.

No. 1B Milwaukee, dbl. overarm,
single pulley drive.

No. 3B Milwaukee, sgl. overarm,
sgl. pulley dr., vertical attach.

No. 1 1/2 Brown & Sharpe, cone dr.

No. 2 Cincinnati, cone drive.

No. 3 Cincinnati, cone drive.

No. 3 Cincinnati, motor driven, high
power type.

UNIVERSAL MILLING MACHINES.

No. 1 Kempsmith, cone drive.

No. 2 Becker-Brainard, cone drive.

No. 1 Garvin, cone drive.

VERTICAL MILLING MACHINES.

No. 3 Cincinnati, high power type, single pulley drive.

No. 5B Becker-Brainard.

PLAIN GRINDERS.

Morse No. 1, 4" x 20".

Modern, No. 12, 5" x 30".

Norton 6" x 32".

CUTTER GRINDERS.

Greenfield No. 1.

Norton No. 2, with power feed.

SURFACE GRINDERS.

Diamond No. 1, 24" x 12".

Pratt & Whitney vertical with 12" wheel, 24" feed.

PRESSES.

Baird No. 1, double action.

Standard mchy. No. 1 screw press.

Standard machinery No. 3A.

Rudolph & Krummell No. 2A.

PIPE MACHINES.

Bignall & Keeler 8".

Forbes 8", hand and power.

PUNCHES AND SHEARS.

Canton No. 2 alligator shear, 1 1/2" bar capacity.

Cockburn-Barrow power punch, 24" throat, 54" flywheel, wt. about 10,000 lbs.

SECOND-HAND MACHINERY

FOR SALE BY

Rosenfeld Machinery Co.,
Bench drills, b. b., Leland-Gifford.
Chain hoists, $\frac{1}{2}$ to 12 tons, Yale & Towne and Ford triplex.
Drill presses, all sizes.
Milling machine, vertical, Becker model C. S.

942 W. Lake St., Chicago, Ill.
Millers, hand, Van Norman No. 1.
Motors, a. c., all sizes, 3 ph., 60 cy.
Motors, a. c., 3 ph., 25 cy., $7\frac{1}{2}$ to 50 h. p.
Radial drill, 2' American.
Tumbling barrels, 2 compartments, 6" x 15" each, for small work.

FOR SALE BY

J. L. Lucas & Son, Inc.,

No. 3 Fox St., Bridgeport, Conn.

GRINDERS.

No. 11 B. & S. plain grinder, $4\frac{1}{2}$ " x 32".
10" x 80" Norton plain cylindrical.
12" x 42" Landis plain cylindrical.
12" x 24" Modern plain cylindrical.
14" Landis universal 10" x 30".
No. 3 Cincinnati universal, 12" x 48".
No. 2 Brown & Sharpe univ., 12" x 30".
No. 3 Wilmarth & Morman surface.
12" Pratt & Whitney.
No. 14 Gardner plain disc, (2).
No. 6 Diamond, single disc.

Several No. 60 Heald cyl. grinders.
No. 1 Landis internal, (4).
No. 34 Van Norman internal.
No. 2 Bright internal, vertical, brand new, (20).
Diamond univ. cutter and reamer.
No. 0 Wilmarth & Morman tool and cutter.
No. 14 Cincinnati tool & cutter, (2).
No. 1 LeBlond tool and cutter.
No. 6 Bryant chucking grinders.

Each machine rebuilt and guaranteed. Send for full particulars.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

1211-1223 N. 12th St.,

St. Louis, Mo.

GRINDERS.

30" x 84" Diamond face grinder.
12" x 48" Landis plain.
Greenfield universal.

5" x 18" Ott grinder.
No. 2 LaSalle surface grinder.
Yankee twist drill.

PLANERS.

24" x 24" x 6' Gleason.
32" x 30" x 7' Whitcomb.

36" x 36" x 10' Flather, 2 heads.

SHAPERS.

Smith & Mills, all sizes.

16" Steptoe.

LATHES.

14"-24" x 54' Barnes, gap.
14" x 6' Monarch, q. c.
14" x 6' Sidney, q. c.
20" x 10' Rahn & Larmon.
24" x 12' Advance.

26" x 13' Putnam.
26" x 14' Rahn & Larmon.
30" x 15' American, q. c.
33" x 20' Draper, triple geared.

DRILLING MACHINES.

3' arm Prentice radial.
34' Canedy-Otto post radial.
24" Aurora, sliding head.

38" Bickford, sliding head.
Barnes drills, all sizes.

MILLING MACHINES.

No. 12 Kemp Smith.
No. 4 Cincinnati plain, single pulley.
No. 14 Brown & Sharpe.
No. 2 Brown & Sharpe plain.

No. 13 Kemp Smith.
Nos. 0 and 3 Burke bench.
Whitney hand miller.

MISCELLANEOUS.

Boring machine, horizontal, No. 2
Pawling & Harnischfeger.
Bulldozer, 75-ton Lorie hydraulic.
Engines, Corliss, 75 to 200 h. p.
Pump machine, 16" Bignall & Keeler.
Punch and shear, No. 2 Cincinnati,
12" throat.

Punch, No. 5 Long & Allat., 5" thr. throat.
Punch, No. 7 Long & Allat., 4" throat.
Riveter, model A Schuster.
Screw machine, No. 6 Woods.
Tilted turret lathes, Nos. 2, 3 and 4 Wood.

SECOND-HAND MACHINERY

FOR SALE BY

Star Foundry Co., • 214 Front Street, • Albert Lea, Minn.

Owing to changes in manufacture we offer:

Air compressor, 6"x6" dbl. cyl. Curtis, tank, 12 h. p. gas engine, 200' hose with couplings, one No. 80 Cleveland hammer, 1-1½ air drill, all mounted on steel truck, portable. Price.....	\$ 500.
Boiler, 50 h. p. vertical, 120 lb. pressure. Price.....	125.
Bolt and pipe cutter, Wiley & Russell, ¾" to 1½" bolts, ½" to 2" pipe. c.s. 200.	
Drill press, 20" Champion, lever, wheel & power fd., bk. grs., with ck. 75.	
Grinder, drill, Sellers, with wheel.....	50.
Grinder, 30" knife, 16" wheel.....	75.
Grinder, Schmidt cyl., c. s., blower and hose.....	400.
Hammer, 300 lb. upright power.....	350.
Keyseater, Fidelity, 5 knives.....	75.
Lathe, 16"x8" Monarch, taper attachment, chuck, tools, new.....	450.
Lathe, 22"x8", rise and fall rest, 2 face plates, 2 chucks, steady rest, change gears, double friction c. s., Armstrong tools.....	200.
Motor, 20 h. p. Gen. Elect., a.c., 220 v., 3 phase, 3600 r.p.m., with starter 100.	
Planer, 48"x48"x14" Niles, 1 head, c. s. Price.....	500.
Screw press, 20-ton.....	50.
Shaper, crank, 16" American, with vise.....	250.
Set of Patterns, 6 sizes, fls, ks, jigs, blue prints for Star Power Hammers 1,200.	
Nearly all above machinery is under belt and can be inspected at our plant. All are in good working order.	

FOR SALE BY

Fitzsimmons & Cole Machinery Company

1208 House Building,

Pittsburgh, Pa.

Air compressor, Ingersoll, 6x6", b. d.	Press, baling hyd. No. 12-Plogemann
Bolt cutters, 1½" to 4" Landis.	Press, No. 3½ Bliss, straight sided,
Boring mill, 62" Bullard, b. d.	3" stroke.
Boring mill, 72" Pond, belt drive.	Punch & shear, No. "A" L. & A., 2"
Die sinker, No. 3 Pratt & Whitney.	thru 1½".
Drill, radial, 5' Fosdick, mtr. d., new.	Punch & s., Pels, type RBLUEF-16.
Drill, radial, 6' American, univ.	Punch & s., Cleveland, 1½" thru 1".
Drill, radial, 7' Prentice, s. p. d.	Punch & shear, No. 3½ Hilles &
Gear cutter, No. 13 Brown & Sharpe.	Jones, 1½" thru 1".
Gear planer, 24" Gleason bevel.	Punch & shear, No. 5½ Hilles &
Grinder, 12"x52" Landis, plain.	Jones, 1½" thru 1½".
Grinder, 16"x48" Landis crankshaft.	Punch, hor., Cleveland, 1" thru 1".
Grinder, 16"x68" Landis crankshaft.	Punch, multiple, No. 5 Hilles & J.,
Hammer, 200 lb. Bradley upright	120" between housings.
helve.	Riveter, Grant, bench type, ¾" cap.
Hammer, 100 lb. Mayer.	Riveter, Hanna, 70-ton, 18" reach.
Hammers, 2-B, 3-B, 4-B & 4-N Nazel.	Riveter, Hanna 30-ton, 75" reach.
Lathe, 18"x 9" LeBlond, q. c. g., b. d.	Rolls, angle bending, 4"x4"x½".
Lathe, 36"x16" American, q. c. g., m. d.	Rolls, plate bending, No. 2 H. & J.
Lathe, 36"x18" American, q. c. g., m. d.	10"x½".
Lathe, 52"x34" Pittsburgh, 2 car. m. d.	Sand blast, MacLeod, 36"x6".
Lathe, turret, No. 3 W. & S. plain.	Shaper, 20" Stockbridge, b. g., m. d.
Lathe, turret, 24" Gisholt, mtr. dr.	Shaper, 24" G. & E., bk. grd., b. d.
Lathe, turret, 5"x30" Bardons & O.	Shaper, 24" Ohio, bk. grd., b. d.
Miller, No. 3-A Garvin plain.	Shear, alligator, Carlin., cap. 1½" sq.
Miller, No. 3-B Milwaukee, plain.	Shear, alligator, No. 3 Canton, 2"
Miller, No. 3-H LeBlond universal.	square, m. d.
Miller, Ingersoll slab 36"x36"x18".	Shear, angle, L. & A., cap. 8"x8"x1½".
Pipe mch., No. 1-B Williams, ¾" to 2"	Shear, guil., No. 3 H. & J., cap. 2½" sq.
Planer, 36"x36"x24" Pond, 4 hds., b. d.	Shear, plate, 120"x½" Garrison, new.
Planer, 48"x48"x14" Gray, 3 hds., b. d.	Shear, rotary, Quickwork, 60" thr.
Planer, 72"x72"x16" Betts, 4 heads.	Shear, squaring, 10"x½" Geo. Ohl.
Planer, 120"x90"x27" Detrick & H.	Straightening roll, 9-roll, rolls 3x42".
Planer, o. s., Cleveland, 36"x36"x16".	Testing machine, 100,000 lbs. Riehle.
Planer, openside, 48"x48"x20" Clev'd	Upsetter, 2½" Ajax, steel bed, b. d.
Press, No. 20 Bliss, o. b. i., 3" stroke.	Welder, No. 20-A Thompson, butt.

SECOND-HAND MACHINERY

FOR SALE BY

The National Brass Co., **Grand Rapids, Mich.**

Brass separator, magnetic.
 Profiling machines, No. 12 Pratt & Whitney, (3).
 Screw machine, hand, No. 1 Pratt & Whitney.
 Screw machine, automatic, 4-spindle Gridley, 14" capacity.
 Spinning lathe, 18" Prybil, semi-ball bearing.

FOR SALE BY

The Akron Equipment Co., **Akron, Ohio**

Automatics, Gridley 4-spindle, 14" cap., serials 2695 & 2070, (2), each... \$900.
 Automatic, National Acme 4-spindle, 14" capacity, serial 9201 750.
 Grinder, National Acme 6"x22" automatic surface 60.
 Lathe, 13"x6" Fitchburg, not screw cutting 70.
 Screw machine, hand, 1" Leisy-Patton. Fine condition 190.
 Threading machine, National Acme 2-spindle, 1" capacity 125.

FOR SALE BY

Badger-Packard Mchy. Co., 133-39 W. Water St., Milwaukee, Wis.

Boring mill, 42" Niles.....\$1,300.	Planer, 48"x48"x12' Whitcomb\$2,200.
Brake, No. 135 D. & K., pwr. 225.	Screw mche., No. 55 National
Drills, 20" Champion, w. & l.,	Acme 500.
(4), cheap.	Turret, 24"x24 Greenlee..... 350.
Hole hog, Moline 2-spindle... 800.	Turret, 34"x26 Greenlee..... 350.
Miller, No. 3 Kempsmith pl... 650.	Turret, 34"x36 Greenlee..... 450.
Pipe mche, No. 306-A Oster- 350.	Turret, 3x36 Pratt & Whitney 800.
Planer, 36"x36"x12' Woodw.-P. 2,000.	Turret, Jones & Lamson..... 600.

FOR SALE BY

W. P. Little Co., . . . **West 9th & Front Sts., Cleveland, Ohio**

LATHES.

14"x 6' LeBlond, q. c. g.	16"x 6' Hendey, q. c. g., tap. att.
16"x 6' LeBlond, q. c. g.	16"x10' Cincinnati, d. b. g., q. c. g.
16"x 6' Bradford, q. c. g., t. a.	26"x 9' Bridgford, d. b. g., (new).

MILLING MACHINES

18" Cincinnati plain. No. 13 Garvin b. g. plain.

SHAPERS

15" Potter & Johnston crank. 18" Walcott back geared crank.

RADIAL DRILLS AND TAPPER.

4' W. E. Gang plain radial. 4" Rickert & Shafer radial tapper.

PUNCH PRESSES.

No. 18 Bliss, o. b. l.	S. G. 55 Ferracute double crank.
No. 184 Holden, o. b. i.	No. 26 Toledo cam drawing.
30" Geared arch press, old type.	No. 144 Williams & White, (2).

GRINDERS, INTERNAL AND EXTERNAL SURFACE.

No. 2 Bath universal.	14" Pratt & Whitney vertical surface.
No. 3 Modern universal.	No. 75 Heald internal, (8).
16" Heald rotary surface.	No. 6 Bryant internal, (2).

TURRET LATHES.

No. 4 Warner & S., p. f. t. & a. c. No. 6 Warner & S., p. f. t. & a. c.

MISCELLANEOUS.

Air compressors, 4"x4" & 6"x6".	Drill press, 24", b. g., p. f. and s. h.
Bolt cutter, 2" Reliance.	Hammer, 250 lb. Morgan steam.
Boring mill, Lucas horiz. 24" bar.	Hammer, 50 lb. Bradley, compact.
Broach, 3-A LaPointe Hudson.	Screw mche., No. 1 Brown & S. auto.
Drill presses, 20" (12).	Spline miller, 2" Pratt & Whitney.

Partial list. Send us your inquiries. 150 other tools in stock.

SECOND-HAND MACHINERY

FOR SALE BY

Mid-West Machine Tool & Supply Co.,

Davenport, Iowa

With a good-as-new, money-back guarantee—Partial list.

Automatic, 14" Cleveland, model A.
Automatic, 24" 34" Cleve., model A.
Boring mill, 24" Bullard.
Boring mill, 36" Gisholt.
Drill, No. 22 Natco.
Drills, 1, 2 & 3 spdl. Leland-Gifford.
Grinders, No. 10 B. & S. pl., s. p. d.
Grinder, 10"x36" Norton plain.

Grinder, No. 70 Heald internal.
Millers, No. 2 Hendey plain.
Miller, No. 3 Cincinnati plain.
Miller, 28" Cincinnati duplex.
Miller, No. 2-V Brown & Sharpe.
Punch, s.e., F24 Badger, 1 1/2" thru 1".
Thread miller, new Taft Pierce.
Turret lathe, No. 6 Warney & S.

FOR SALE BY

McMullen Machinery Company,

Grand Rapids, Mich.

Automatic, 8" Cleveland.
Automatics, No. 00 B. & S.
Band saw, 10" Napier, metal.
Cut-off saw, No. 4 N. & B.
Drill, 31" Barnes, sliding head.
Grinder, Cleveland, profile.
Grinder, No. 6-A Bryant.
Lathe, 9"x21 1/2" Sundstrand, mfg.
Lathe, 24"x26 Greenlee, flat turret.

Miller, No. 2-H Becker vertical.
Pipe mch., 6" Merrill No. 64.
Press, Chicago scrap baler.
Press, No. 3 Manville, d. a.
Presses, No. 6 Manville, pillar, (3).
Presses, No. 6B Manville, pillar, (2).
Shear, No. 14 Pettingell, rotary.
Shear, No. 2 W. F. Co. 36" gang.
Welders, No. 10-A Thomson vert. (7)

Ask for Complete List.

FOR SALE BY

Jones Machine Tool Co.,

528-532 E. Front St., Cincinnati, O.

LATHES.

16"x 6' LeBlond, q. c. g. \$ 375.
16"x 8' Hendey, q. c. g. & t. a. 975.
18"x 8' American, q. c. g. 725.
20"x10' Boye & E., q. c. g. & t. a. 875.

24"x10' Lodge & Shipley, q. c. g. \$1250.
30"x12' Houston Stam., q. c. g. 750.
24"x20' Lodge & Shipley, q. c. g. 1250.
42"x20' New Haven, l. c. 1250.

MILLING MACHINES.

No. 1 1/2 Valley City universal... \$ 500.
No. 1 1/2 Cincinnati universal... 675.
No. 2 Hendey universal... 775.

No. 3 Cincinnati plain \$ 950.
No. 3 LeBlond plain 900.
No. 3 B. & S. vert., s. p. drive 1250.

RADIALS AND DRILL PRESSES.

30" American, s. p. drive... \$ 675.
42" Gang, cone drive... 375.
48" Bickford, cone drive... 475.
72" Niles, cone drive... 750.
72" Dreeses, motor drive... 1500.

24" Hoefler, sta. head \$ 175.
24" Rockford, sliding head... 225.
30" Cincinnati, sliding hd., t. a. 325.
36" Gould & Eberhardt, s. h. 225.
42" Bickford, stationary head. 225.

PUNCH PRESSES AND SHEARS.

No. 2 Niagara \$ 140.
No. 5 Niagara, b. g. 475.
No. 3 Loshbough & Jordan ... 300.
No. 2 Swain horn press... 275.
60" Bertsch sq. shear, 4" cap... 1200.

No. 6 Whiting, single end... \$ 475.
No. 4-Verdin, b. g. 675.
No. 88 Bliss, d. b. g. 1500.
No. 34 Toledo plain... 550.
No. 516A Toledo sq. sh., 16 ga. 275.

PLANERS AND SHAPERS.

24"x 6' Powell 1 head... \$ 525.
30"x 6' Gray, 2 heads... 850.
30"x12' Gray, 1 head... 975.
42"x26" Cincinnati, 2 heads... 2250.

16" Smith & Mills shaper... \$ 325.
18" Steptoe geared shaper... 175.
21" American b. g. shaper... 775.
24" Kelly b. g. shaper... 825.

MISCELLANEOUS.

Chain hoists, various sizes, (50)
Gear cutter, 26" Cinti No. 3... \$ 350.
Gear cutter, 48" B. & S. No. 4. 750.
Gear hobber, 24" S. & S. 550.
Gear hobber, Barber-C. No. 12 1075.
Grinder, 10x50 Norton 475.

Hammer, steam, 800 lb. Niles \$ 800.
Hammer, 100 lb. Bradley 275.
Mills, 36" Bullard vert., (2), ea. 1500.
Mill, Lucas No. 21 horiz. 24" bar 1500.
Shaper, 36" Fellows No. 6 225.
Slotter, 18" Niles vertical... 1500.

Write for our latest Stock List.

SECOND-HAND MACHINERY

FOR SALE BY

Syracuse Supply Company, 314 W. Fayette St., Syracuse, N. Y.

Guaranteed New Machines in original crates at prices below list:

Crucible, FD-104 Hoskins.
Drills, 21" Canedy-Otto (2).
Drills, 20" Buffalo (4).
Grinder, Churchill internal.
Lathe, 14"x6' Hamilton.
Lathe, 10"x5' Monarch.
Lathe, 14"x6' Monarch.
Lathe, 14"x8' Monarch.

Lathe, 16"x6' Monarch.
Miller, 42" type "B" Briggs.
Pipe machine, No. 70 Forbes.
Screw mchs., No. 4 W. & S. g.f.h., (3).
Slotter, No. 3 Rhodes.
Straightener, No. 2 Corey.
Tilted turret, No. 4 Wood.

Exceptional values in Used Tools:

Cylinder borers, 6-spindle Moline adjustable.

Drill press, 25"W.F. & John Barnes.
Drill press, 4-spindle Reed sensitive.
Drill press, 3-spindle Reed sensitive.
Drill press, 2-spindle Reed sensitive.
Lathe, 14"x 6' American.
Lathe, 14"x 6' Monarch.
Lathe, 16"x 6' Hendey, rebuilt.
Lathe, 16"x 8' American, geared head, rebuilt.

Lathe, 16"x 8' Monarch.
Lathe, 16"x10' American.
Lathe, 28"x12' Draper.
Miller, No. 5 Becker vertical.
Miller, No. 2 Brown & S., rebuilt.
Miller, No. 4 LeBlond, rebuilt.
Planer, 30"x30"x16' L. W. Pond.

Planer, 36"x36"x14' Woodward.
Planer, 60"x60"x22' Niles.
Press, No. 69N Bliss.
Radial, 5' Pond.
Radial, 4' Cin'ti-Bickford, GB-BD.
Shaper, 16" Gould & Eberhardt.
Thread miller, 10" Lees-Bradner.
Tilted turret, No. 6 Wood.
Turret lathes, No. 4 Foster (2).
Turret lathe, No. 2 Warner & S., hollow hex.
Turret lathe, 24"x26 Pratt & Whitney.
Turret lathe, No. 2 s. g. Garvin.
Turret lathes, 3x36 Jones & L. (3).
Turret lathe, 2x24 Jones & Lamson.
Turret lathe, 21" Gisholt.
Turret lathe, No. 3 Cincinnati-Acme.

"Bridgebilt" Factory Seating and Tool Racks

A diversified line to meet requirements of every branch of industry.

The Bridgebilt line
will give long and
satisfactory service

For illustrated price list
and discounts write—

**The Chicago Wire
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Special December Bargains

You can't afford to overlook

All Machines thoroughly Overhauled and Rebuilt

LATHES

24"x12' Greaves-Klusman Heavy Pattern Lathe, with double back geared head and full equipment, including two chucks.

Special Price \$1675.00

30"x10' "American" High Duty Lathe, with double back geared head and complete equipment.

Special Price \$2000.00

RADIALS

3½ Ft. "American" TRIPLE PURPOSE Radial, arranged for Simplified Motor Drive (Motor on Arm) and with complete equipment. (In every way the equivalent of a new machine.)

Special Price \$1775.00

6 Ft. Bickford Triple Geared Radial, with gear box arranged for belt drive, and with complete equipment.

Special Price \$2500.00

In addition to these special bargains we have a variety of Lathes, Planers, Shapers, Radials, Milling Machines, Grinders, etc., to offer at attractive prices.

Send for our complete list. There is no obligation.

The American Tool Works Co.

Cincinnati, U. S. A.

Builders of LATHES — SHAPERS — RADIAL DRILLS

FOR SALE

5—3 SPINDLE National High Speed
DRILL PRESSES \$110.⁰⁰ each.

6—NO. 1 CINCINNATI Back Geared Plain
MILLING MACHINES \$275.⁰⁰ each.

4 Spindle **NATIONAL ACME** Screw Machines

6—No. 52— $\frac{7}{8}$ " Capacity.... **\$425.⁰⁰ each.**

2—No. 53— $1\frac{3}{8}$ " " **475.⁰⁰ "**

2—No. 55— $1\frac{5}{8}$ " " **600.⁰⁰ "**

3—No. 56— $2\frac{1}{4}$ " " **650.⁰⁰ "**

CINCINNATI AUTOMATIC MACHINE CO., Cincinnati, Ohio

Ten Real Bargains

20"x96" "Norton" Cylinder Grinder.....	\$1000.
72A "Harrington" Multiple Spindle Drill, arranged for 20 spindles, equipped with 10.....	1000.
No. 2 "Barrett" Cylinder Boring Machine.....	1000.
42"x18" "Johnson" Lathe, triple grd., with taper attach....	1000.
28" "American" High Duty Shaper, cone.....	1000.
24" "G. & E." Heavy Duty Shaper, cone.....	1000.
3' "Cin. Bickford" Plain Radial Drill, single pulley drive.....	1000.
3' "American" Plain Radial Drill, single pulley drive.....	1000.
4' "Mueller" Plain Radial Drill, single pulley drive.....	1000.
30"x30"x8" "Ohio" Planer, single head.....	1000.

**These Tools are selected at random from
our stock of over 250 Machine Tools.**

L. F. Seyfert's Sons, Inc.

437 N. Third St.,

Philadelphia, Pa.

The Rights to Manufacture
The GARVIN Line
FOR SALE

This offer includes all drawings, patterns, jigs and fixtures for the manufacture of GARVIN universal, plain and vertical milling machines, automatic index machines, dividing heads and tail stocks, with manufacturing and service rights and customers' list.

Approximately \$5,000,000 worth of machines sold. \$100,000 can be salvaged from machines in process of manufacture. Annual service business about \$15,000.

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**No need to tell you more.
You know these machines.**

Write—Wire—Call or Phone for Details

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FOR SALE BY Simmons Machine Tool Corp.

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149 Broadway

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BUFFALO
88 Exchange St.

Milling Machines

No. 5 Cincinnati High Power Plain.
No. 2 Cincinnati High Power Plain.
No. 3 Cincinnati High Power Vert.
No. 2 Cleveland All Geared Plain.
No. 1 Cleveland All Geared Plain.
No. 20 Garvin Vertical New.
No. 22 Garvin Vertical New.
No. 15 Garvin Vertical 3 Spindle.
No. 3 Davis Drum Type Cont.

Lathes

36" x 60' Bridgeford All Geared Head.
36" x 34' Bridgeford All Geared Head.
36" x 22' Bridgeford All Geared Head.
36" x 60' Bridgeford Boring Lathe.
38" x 56' LeBlond Boring.

Presses

No. 2-B Standard Dbl. Act.
No. 55 DAG Ferracut Drawing.
21 Ton R. D. Wood Hydraulic.
No. 2 B. A. Gier Straightening.
No. 7 Myers Branch Arbor.
No. 4 Greenerd Arbor.

Automatics

No. 00 B. & S. Automatics.
7/8" Cleveland Single Spindle.
2 1/4" Gridley 4 Spindle.
3/4" Gridley 4 Spindle.
2 1/4" Gridley 1 Spindle.
3 1/4" Gridley 1 Spindle.
2" Cleveland Model A.
2" Cleveland Model C.

Radial Drills

87" Warren D. C. Motor.
72" American Gear Box.
72" Bickford Gear Box.
60" American Triple Geared.
60" Bickford Gear Box.
48" Bickford Gear Box.
28" American Sensitive.
24" Mueller Gear Box.

Turret Lathes

24" Vertical, Side Head.
34" Vertical, Bertram.
36" Vertical, Side Head.
18" Libby High Duty.
No. 4 Warner Swasey.
No. 3 Warner Swasey.
No. 1 Warner Swasey.
2 1/4" x 11 Acme, G. F. H.
2 1/4" x 10 Mitholland, G. F. H.
No. 2 1/2 Garvin, G. F. H.
No. 5 1/2 Bardons & Oliver.

Threaders

8" Eaton, Cole & Burnham.
8" Bignall & Keeler Pipe.
3" Landis Bolt, Lead Screw.
4" Williams Pipe Threader.
No. 2 Garvin Tapper B. G.
1 1/2" Acme Six Spindle Tapper.

Vertical Boring Mills

42" Bullard 2 Heads.
48" Colburn 2 Heads.
51" Bullard 2 Heads.
54" Colburn 2 Heads.
62" King, 2 Swivel Heads.
62" Colburn 2 Heads.
72" Niles 2 Heads.
84" Pond Extra Heavy.
144" Niles, 2 Heads.

Grinding Machines

No. 2 Brown & Sharpe Surface.
No. 2 LaSalle Surface.
24"-32" x 10" Norton Plain.
20" x 72" Brown & Sharpe Universal.
14" x 96" Norton Plain.
14" x 72" Norton Plain.
14" x 50" Norton Plain.
10" x 72" Norton Plain.
6" x 32" Norton Plain.
No. 1 Brown & Sharpe Universal.
No. 14 B. & S. Wide Wheel.

Miscellaneous

48" Cleveland Rotary Planer.
No. 3 1/2 Baker Keyseater MD.
1000 lbs. Rennerfelt Electric Furnace.
Eastman Photostat No. 0.
3F Lees Bradner Thread Milling Mch.
Garvin Die Slotter, New.
Ingenoll-R. 2 Stage, XB Compressor.
40-A Thompson Built Welder.
300 lb. Bradley Upright Hammer.
1000 lb. McDougal-Potter single leg
Forging Hammer.
28" Queen City Shaper.
60" x 60" x 22" Pond Planer.
24" x 24" x 12" American Planer.
36" x 36" x 12" D. & H. Openside.
5A Lees-Bradner Gear Hobbers.
16" x 32" Gleason Gear Planer.
No. 3 B. & S. Automatic Cutter.
No. 3 Hiles Jones Guillotine Shear.
No. 2 Carlin Alligator Shear.
2 1/2" Acme Upsetter.
3" Acme Upsetter.

NEW 3 PHASE MOTORS CHEAP. 3 H. P. \$57.50; 5 H. P. \$67.50

LATHES

12"x 5' Cleveland, geared head.
14"x 6' Carroll-Jamieson, new.
14"x 8' Young.
14"x 6' Hamilton, grd. hd., motor dr.
14"x 6' Monarch, quick change.
14"x 6' Von Wyck, quick change gear, taper attachment.
14"x 8' Sidney, double back geared.

16"x 8' Sidney, double back geared.
18"x 10' American, quick change.
20"x 10' Hamilton, rapid production.
24"x 24' Prentice, with raising block.
25"x 12' Sidney heavy duty.
28"x 8' Bridgeford, heavy duty.
8x60" & 10x72" Fitchburg La-Swing.

TURRET LATHES and SCREW MACHINES

No. 4 Defiance hand screw machine.
No. 4 Woods Tilted Turret.
14" Mulholland.
2x24 and 3x36 J. & L.

No. 3-B Foster, 5" capacity, new.
Warner & Swasey No. 2.
Nos. 56 & 56 National Acme auto.
6" Gridley single spindle, automatic.

SHAPERS

14" Niles, traveling head.
14" Steptoe, crank.
16" American, tool room.

16" American b. g. crank.
16" O. & S. b. g. crank, new.

PLANERS

22"x22"x 5' Cincinnati.
21"x24"x 6' Gray.
26"x26"x 10' Gray, 1 head.

30"x30"x 10' American, 2 heads.
36"x36"x 15' Pond.

PRESSES

No. 3-A Willard-A inclinable.
No. 1 Toledo inclinable.
Nos. 14, 2, 24 & 4 Robinson.

Emco, bench, for radio parts.
No. 35 Niagara straight side.
Perkins, dbl. housing, wt. 4,000 lbs.

DRILLS and RADIALS

34" Silver, sgl. pulley, gear box dr.
3' & 44" Morris plain gear box.
4' Universal Radial Drill Co. plain.
Electric drills, Black & Decker.

22", 24", 26", 28" and 32", sliding hd.
20"-24" & 26" Barnes, all geared.
4-spindle Reed sensitive.
Electric drills, Thor, all sizes.

MILLING MACHINES

No. 1 Kempsmith universal.
No. 2 Kempsmith plain.
U. S. and Whitney hand.
No. 25 Becker plain, power feed.
No. 3 Kempsmith univ. and plain.

No. 3 LeBlond, with vertical attach.
No. 2 H Brown & Sharpe plain.
Briggs type "A" high duty, 24x8 table.
No. 7 Becker Lincoln type.
Oesterlein 24x7x18 plain.

GRINDERS

Nos. 1 & 78 W. & M. surface.
No. 2 W. & P. 10x30 universal.
6"x 15" Fitchburg plain.
12x36 Cincinnati universal.
12x42" & 16"x 30" Landis plain.
36" and 66" Yates plate.
Perfection cylinder.

No. 60 Heald cylinder.
Schmitt cylinder grinder.
No. 3 Ohio universal & tool.
No. 4 Gardner 20" double disc.
No. 20 Bryant, chucking.
Capital internal, new, 2"x2".

MISCELLANEOUS

Band saw, metal, Klemm.
Band saws, Napier 4"x4", 10"x10".
Bending rolls, 7' for 3" plate.
Boring mill, Colburn No. 3, tur. hd.
Boring mill, 54" & 60" Colburn, 2 hds.
Brake, 10', 18-gauge metal.
Broaching machine, No. 3 LaPointe.
Cold saw, Burr, 3" capacity.
Compressors, 6x6, 8x8 and 12x10.
Drawing tables, adjust., 42"x6" top.
Gear cutter, 26" No. 3 B. & S.
Gear millers, Bilton No. 1, (5).
Hammer, 40 lb. Bradley, helve.
Hammer, 150 lb. Standard drop.

Oil separator, Springfield.
Pipe machines, 2", 4" & 6".
Pumps, Gould triplex, 64x8" & 7x8".
Punch & shear 1/2 by 1/2, 10" throat.
Riveting hammers, type B, Nos. 2, 3, 4 & 5-A.
Scale, 1500 lb. Toledo, dial type.
Scleroscope, Shore.
Shear, No. 296 Robinson, 14 ga., 5'.
Shear, No. 20 Quickwork, 30" throat.
Shear, circular, Pettigell 60".
Tapping mche., 1/2" Rickert-Shafer.
Tapping machine, Acme 6-spindle.
Threading mche., W. & P. 2-spindle.

OSBORNE & SEXTON
MACHINERY COMPANY
COLUMBUS OHIO

DEPT. H.

Must Vacate Our Warehouse — At Hundreds Of

BORING MILLS:	30" Warner & Swasey Vert., table 29" dia.....	\$225.
	36" Niles, 2 swivel heads, table 33" dia.....	800.
	36" 48" Bridgeport Extension, 1 swivel head.....	325.
	51" Bullard, 2 swivel heads, table 50" x 3½".....	500.
	72" Betts, table 60" dia., 7½" thick, 2 hds.....	750.
DRILL PRESSES:	4" Bickford Radial, single pulley drive.....	\$450.
	4" Dreses Radial.....	400.
	8" Pond Radial.....	500.
GRINDERS:	Webster & Perks D. E. Heavy Foundry Type, takes wheels 24" x 4".....	\$ 75.
	Norton D. E. Heavy Foundry Type, takes wheels 24" x 4".....	75.
LATHES:	19" x 10" LeBlond, b. g., hollow spindle, motor drive, as is.....	\$150.
	21" x 12" Johnson, hollow spindle, taper attach.....	275.
	24" x 16½" Johnson, solid spindle.....	375.
	26" x 10½" Walcott Heavy Duty Quick Change Gear, dbl. bk. gr., hollow spdl., 8, each.....	690.
	3" x 36" Jones & Lamson Flat Turret Lathe, lot extra tools, as is.....	200.
MILLING MCHE.:	Cincinnati No. 3 Plain, overhanging arm, table 12" x 3' 11", as is.....	\$ 250.
	20" Circular Table for Milling Machine.....	50.
PRESSES:	No. 2 Baird Foot Power, 2¾" stroke, bolster plate 8" x 6", bench type without stand, 3, ea.....	\$ 15.
	Straight Side Punch Press, ¾" stroke, 10¾" bet. housings, mounted on iron stand.....	50.
	No. 3 Stiles Incl. Plain Fly Wheel, 1½" str.....	200.
PUNCHES and SHEARS:	Waterbury-Farrell Rotary Shear, 14" throat, knives 4½" dia. Cap. about 16 gauge.....	\$ 50.
	Long & Allstatter Pattern Style D Single End Plunger Type Punch and Shear.....	500.
	Mahoning Single End, 32" throat, cap. 1" x 1".....	425.
	Covington No. 2 Sgl. End, 12" thrt., cap. 1 x 1".....	450.
HAMMERS:	25 lb. Bradley Cushioned Helve.....	\$150.
	40 lb. Bradley Cushioned Helve.....	200.
	75 lb. Bradley Upright Strap.....	300.
	100 lb. Bradley Upright Strap.....	375.
	800 lb. Bement Single Frame Steam Forging.....	500.
	2000 lb. Bement-Miles Sgl. Frame. Stm Forg.....	1300.
	2000 lb. Bement-Miles Steam Drop.....	500.

Russell Machine Company, 144

Attractive Prices To Move Stock Of Other Bargains!

225. 800. 325. 500. 750.	PLANER:	48"x48"x22' Pond, 2 Rail & 2 Side Heads ..	\$2000.
450. 400. 500.	SLOTTER:	Niles 15", Crank, 30" dia. rotary table.....	\$375.
75. 75. 150. 275. 375. 690. 200. 250. 50.	MISCELLANEOUS:	Baler, No. 8 Poston Hopper Door, steel, makes bale 16"x22"x28" weighing 100 lbs.....	\$ 10.
		Belting, 300 lbs. of Rubber, Canvas & Leather, mostly leather, up to 3" wide, single and double, fair condition. Lot.....	30.
		Bending or Folding Machine, hand power, to work on bench. Bending length 12".....	10.
		Blowers, 2 No. 8 Sturtevant Pressure, each.....	40.
		Blowers, 2 No. 8 Buffalo Volume, each.....	40.
		Boring Bars, 7 assorted sizes up to 1 3/4" dia., 18" long and Tool Post Boring Bar Holder. For the lot.....	12.
		Bulldozer, No. 2 Williams-White.....	300.
		Chain, about 600 lbs. Shop Chain, 7/8" link, 1 1/2¢ per pound.	
		Chucks, 9 drill, will take 1/16" up to 5/8". Lot...	12.
		Chuck, Newton 9" Independent 3-Jaw Steel...	10.
		Expanders, 13 Boiler Flue 1 1/2" to 4 1/2". Lot...	10.
		Gas Engine, 15 H. P. Fenner Horizontal.....	100.
		Lathe Dogs, 65 assorted sizes, will take work from 1/8" to 6" dia. Good condition. Lot \$16.50.	
		Milling Mch. Arbors 28 & 32" Long, for both..	\$ 15.
		Milling Cutters, 75 assorted sizes, fine condition. 1/2 present new cost.	
		Pipe Folder, 32" hand power for 24 gauge and lighter. For use on bench.....	25.
		Pipe Machine, Oster hand power, 1" to 4".....	25.
		Pipe Machine, Eaton-Cole-Burnham 1" to 4".....	250.
		Pipe Machine, Eaton-Cole-Burnham 2 1/2" to 8".....	500.
		Planer Chuck, adjustable, will take in work up to 23" wide, 33" long.....	20.
		Punches, 6 Hand Screw from 3/8" thru 7/8" to 1 thru 1". Lot.....	15.
		Platform Scale, Fairbanks, will weigh up to 1000 lbs., excellent condition.....	15.
		Salamander for Coke heating, inside dimensions 22"x22"x24", 38" high. Good as new...	15.
		Shaper, Gould & Eberhardt 14" sq. grd. crank	175.
		Swaging Machine, Excelsior belt dr., cap 3/16"	75.
		Tool Holders, 20 Armstrong, assorted sizes. Lot	5.
		Vises, Machinists 5" to 7" plain jaw and plain base, some swivel base. Each.....	\$7.50

y, 1447 Oliver Bldg., Pittsburgh, Pa.

**MOTCH AND
THE MERRYWEATHER
MACHINERY CO**
CLEVELAND
DETROIT CINCINNATI
PITTSBURGH

- 54" Bullard Boring Mill.
- 6' American Radial Drill.
- 36" Cincinnati Bickford Drill.
- No. 4 Six Spindle Foote-Burt Drill.
- 10x24 Norton Grinder.
- 10x36 Norton Grinder.
- 42"x32' American Triple Geared Motor Driven Lathe.
- 36"x18' Lodge & Shipley Triple Geared Selective Head Lathe.
- 18" Cincinnati Plain Automatic Milling Machine.
- No. 26 Toledo Cam Drawing Press with 8" stroke.
- 24" Gould & Eberhardt Shaper, single pulley drive.
- 15" Newton Vertical Slotter, arranged for motor drive.

These are twelve of three hundred machines, of every size and description, stocked in our Cleveland warehouse. All overhauled machines carry our guarantee. We invite your inquiries and inspection at any time.

New & Guaranteed Rebuilt Machine Tools

At Prices to Net You a Worthwhile Saving

BORING MILLS

- 1—Landis No. 35 horizontal.

DRILLS—Upright and Radial

- 15—Allen 1, 2, 4 and 6 spindle.
- 12—New 24" Sibley, upright.
- 3—Snyder, 28" vertical.
- 4—Henry & Wright 2, 4, 5 spdl.
- 2—New Turner No. 3, vert. tur.
- 1—Cincinnati-B. 3' Radial, s.p.d.
- 1—Mueller 3½' Radial.
- 1—Fosdick 4' Radial.
- 1—Baush 6' Radial.
- 1—N.-B.-P. 96" Ridgeway, motor drive, plain Radial.

DRILLS—Multiple Spindle

- 1—Natco No. 30, 12 spindle.
- 2—New Baush No. 3, 21 spdl.
- 1—New Baush No. 4, 56 spdl.
- 1—Fox, 6 spindle.
- 1—Moline, 4-spindle.

SCREW MACHINES—Automatic

- 12—Gridley 4-spdl., ¾, 1¼, 1¾".
- 8—Cleveland ¾, 1¼, 2¼" A.
- 18—Cleveland ½, ¾, 1¼" B.
- 1—Cleveland 7¾" A.
- 16—B. & S. Nos. 0-C, 2, 0, full aut.
- 1—B. & S. No. 6 full automatic.
- 1—New Britain 1x5 bar mch.
- 9—New Britain Nos. 24, 33, & 34.

MILLING MACHINES

- 1—New Rockford No. 2½ Univ.
- 1—LeBlond No. 3 Universal.
- 2—Rockford No. 1½; No. 2 Pl.
- 1—LeBlond No. 2½ Plain.
- 3—Cincinnati Nos. 2 & 3, Plain.
- 2—Brown & S. Nos. 2 & 4 Plain.
- 1—B. & S. No. 13-B Plain.
- 4—B. & S. No. 12, Mfg.
- 2—Taylor & Fenn Vertical.
- 3—Becker Nos. 2H, 4B, Vertical.
- 6—Becker Nos. AB & 5C, Vert.
- 1—Cincinnati 48" Duplex.
- 2—New Garvin No. 2 Duplex.
- 1—Newton Duplex.
- 1—Van Norman No. ½ Duplex.
- 6—P. & W. 4" Spline.
- 2—P. & W. 4½x12 Thread.
- 8—P. & W. 6x14; 6x48, 6x80 Thread.
- 1—Lees-Bradner No. 8 Thread.

GEAR CUTTERS

- 15—Barber-Colman Nos. 3 & 12.
- 4—Hercules 8".
- 7—Brown & S. 3x36; 3x26; 4x36.

GEAR CUTTERS—Continued.

- 1—Brown & Sharpe No. 13.
- 1—Cincinnati No. 4-A, 4x48.
- 3—G. & E. No. 18-H.
- 1—G. & E. 60" spur.
- 1—S. & S. 26" spur and spiral.
- 2—Fellows Nos. 61 & 6.
- 20—Gleason bevel, 6", 11" & 18".
- 1—Lees-B. No. 5A gear gen tor.
- 1—Ingle 12" tooth rounder.

PLANERS

- 7—Putnam 26x26x8', 2 heads.
- 1—W. & P. 24x24x10'.
- 1—New Cleveland 36x36x8'.
- 1—W. & P. 36x36x12', 4 heads.
- 2—Gray 38x38x20, 3 hds., mtr. dr.
- 1—Putnam 48x48x12', 2 heads.
- 1—Putnam 48x48x30', 4 heads.

GRINDERS

- 1—Blanchard No. 16 Surf. m. d.
- 1—Brown & Sharpe No. 13 Univ.
- 1—Brown & Sharpe No. 4 Univ.
- 1—Brown & Sharpe No. 14 Plain.
- 1—Springfield 12x12x48 Vert.
- 4—Cincinnati No. 2, 12x36.
- 1—Landis 10x20 Plain.
- 7—Norton 6x32, 10x36 & 16x36.
- 1—Fitchburg 12x54.
- 12—Bryant Nos. 20 & 6 chucking.
- 2—Bryant No. 15 double spindle.
- 28—Heald Nos. 65, 60 and 70.
- 3—Heald Nos. 255 & 260.
- 1—Van Norman No. 34.
- 1—Diamond No. 2 Surface.
- 1—Diamond 84" face.

TURRET and SCREW MCHS.

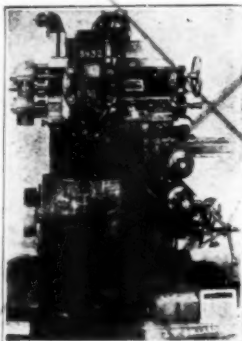
- 10—W. & S. No. 1 Wire Feed.
- 1—W. & S. No. 2-A Univ.
- 1—W. & S. No. 4; No. 6 Univ.
- 4—Foster No. 1-B Universal.
- 1—New Foster No. 10 Turret.
- 4—Greenlee 2¼"x26" Turret.
- 4—J. & L. 2x24 and 3x36.
- 1—J. & L. 2-spindle Turret.
- 2—New Milholland No. 4.
- 5—Foster No. 4 Screw.
- 40—B. & S. Nos. 0, 1, 2, 6, w. f.
- 1—Acme Fox Monitor.
- 1—W. & S. No. 6 b. g., p. f.
- 2—P. & W. 1x14" Screw.
- 6—Potter & Johnston No. 6A.
- 6—Potter & Johnston No. 5-A.

LATHES

- 2—Hendey 12x5, yoke head.

MOREY AND CO. INC. 408 Broome St., NEW YORK, N. Y.

24-in. Bullard Vertical Turret Lathe



Rapid production type—rebuilt and guaranteed.

PRICE

each, f.o.b. Bridgeport,

\$1650.00

*Send for specifications
and our guarantee*

J. L. Lucas & Son, Inc.

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Guaranteed Rebuilt Machine Tools

30"x12' Heavy Duty LeBlond Lathe, ck. change, double back gear.

Price \$1400.

30"x26' Pond Lathe, motor drive.

Price \$1200.

No. 3B Brown & Sharpe Milling Machine, single pulley drive.

Price \$750.

No. 3 Cincinnati Milling Machine, single pulley drive.

Price \$850.

36" Fellows Gear Shaper.

Price \$700.

No. 4 LeBlond Milling Machine, Universal, cone dr., double back gear.

Price \$850.

18"x8' Barker Lathe, loose change gear.

Price \$350.

16" Barker Back Geared Crank Shaper.

Price \$365.

24" Bullard Rapid Production Turret Lathe.

Price \$800.

18" Barker Single Geared Crank Shaper.

Price \$200.

WM. BARKER & CO.
COVINGTON, KY.

Opportunity Knocks Again For the Conservative Buyer

Real Values in Machine Tools—

Lathes

- 1—48"x21' Pond (Plainfield) with motor.
- 1—44"x45' S W Putnam (Fitchburg) with motor.
- 3—32"x12' Pittsburgh.
- 1—30"x28' Pond (Plainfield) with motor.
- 1—24"x12' Reed Prentice, geared head, m. d.
- 1—20"x 8' Reed.
- 1—18"x 8' Reed.
- 1—18"x10' Schumacher & B., t. a.
- 2—18"x 8' Rockford semi q. c.
- 1—3½"x84" Lo-Swing, 2 carriages.

Milling Machines

- 1—No. 2 Brown & Sharpe univ.
- 3—No. 2 Brown & Sharpe plain.
- 1—No. 2 Brown & Sharpe vertical.
- 1—No. 3 Brown & Sharpe plain.
- 1—Becker No. 5-B vertical.
- 1—Model AB Becker vertical.
- 2—No. 13-B Brown & Sharpe.
- 1—No. 2 Cincinnati, single pulley, plain.
- 1—U. S. hand miller.
- 1—Blomquist & Eck hand miller.

Grinders

- 1—No. 2 Brown & Sharpe cutter.
- 1—No. 2 Brown & Sharpe surface, with mag. chuck.
- 1—No. 2 Brown & Sharpe univ.
- 1—Worcester internal.
- 1—21"x96 Norton plain.
- 2—10"x50 Norton plain.
- 2—Landis crankshaft.
- 1—No. 6 Gardner disc.

Boring Mills—Vertical

- 1—10' to 16' Niles (Hamilton) with motor.
- 1—96" Niles.

Boring Mills—Horizontal

- 2—No. 2 Rockford horizontal.
- 1—Blomquist & Eck horizontal.
- 1—Blomquist & Eck (original) horizontal.

Planers

- 1—72"x72"x24' Detrick & Harvey, motor drive.
- 1—48"x48"x12' Putnam, 3 heads, with motor.
- 1—36"x48"x18' G. A. Gray, 2 hds. on cross rail, 2 side heads, 14 h. p. motor.
- 1—30"x30"x14' G. A. Gray, 2 hds. on cross rail, 10 h. p. motor.
- 1—24"x24"x6' G. A. Gray planer.

Presses

- 1—S. 304 Ferracute.
- 1—150-ton high speed steam.
- 1—No. 108½ Cleveland punch press.
- 1—78½ Bliss str. sided, 52000 lbs.
- 1—No. 26 Toledo cam press.
- 1—No. 78½ Toledo.
- 1—No. 68 Stoll, straight side.

Drill Presses and Radial Drills

- 2—D 2 Colburn.
- 1—26" Barnes.
- 1—34" Barnes.
- 1—3½' Fostick & Holloway radial
- 1—6 spindle Allen sensitive.
- 1—36" Aurora.
- 1—12 spindle Harrington.
- 1—6 spindle Foote-Burt.
- 1—Moline Hole Hog.
- 1—6' Niles radial.
- 1—2½' Mueller radial.

Turret & Screw Machines

- 2—3¼" Gridley sgle. spdl. autos.
- 2—Model B, 2" Cleveland autos.
- 3—Model B, 2" Cleveland auto-matics, New.
- 2—Model B, 1¼" Cleveland auto.
- 2—24" Gisholt turret lathes.
- 1—No. 6 Foster screw.
- 2—No. 4 Foster screw.
- 5—No. 4 Dreeses turret lathes.
- 1—18" Gisholt turret lathe.
- 1—21" Libby turret lathe.
- 1—No. 6 Warner & Swasey turret.
- 1—No. 2 Brown & Sharpe screw.
- 1—No. 1 Brown & Sharpe screw.
- 1—No. 4 Woods tilted turret.

The EMPIRE MACHINERY EXCHANGE CO., Inc.

Offices and Warehouses: 2261 E. 14th St., Cleveland, Ohio

POWER PRESSES

Straight Side

No. 1015 Max Ams D. C., 2" stroke, weight 20000 lbs.
 Perkins No. 20, Model H, D. C., 5" str., weight 36000 lbs.
 No. 73½ Bliss, side shear, 3" stroke, weight 5600 lbs.
 No. 75½ Bliss, side shear, 4" stroke, weight 14400 lbs.
 No. 3¼-B Bliss, toggle, weight 39000 lbs.
 No. 162-A Consolidated, 3" stroke, weight 4700 lbs.
 No. 8-7 Z. & H., geared, 3" stroke, weight 6000 lbs.

Inclinable

No. 16 Stoll, geared, 2" stroke, weight 6000 lbs.
 No. 20 Bliss, 2½" stroke, weight 2250 lbs.
 No. 4 V. & O., 2½" stroke, weight 4600 lbs.
 No. 4 Adriance, 3½" stroke, weight 2400 lbs.
 No. 2 Niagara, 1¼" stroke, weight 650 lbs.

150 Other Presses—Low Prices

J. N. MOYER

117 N. 3rd St., :: Philadelphia, Pa.

FOR SALE BY

THE CO-OPERATIVE MACHINERY CO.

7514 Indiana Ave., Cleveland, Ohio

54"x9" New Haven Stub Lathe.....	\$ 650.
9"x14" Porter Cable Mfg. Lathe, slow speed, with countershaft.....	225.
9"x14" Porter Cable Mfg. Lathe, high speed, single pulley drive.....	275.
No. 1 U. S. Hand Miller, good running condition.....	125.
No. 5 Becker Vertical Milling Machine, fairly old machine, but in good running condition.....	375.
No. 2 LeBlond Plain Milling Machine, heavy duty, cone drive, good.....	575.
No. 3½ Crosby C type Press, not inclinable, area bolster plate 21"x30", opening in bed 15"x23", opening in back 22", face of slide 10½"x17", distance back from center of slide 10½".....	225.
No. 3 Toledo O. B. I. Punch Press, good condition.....	325.
16" American Pl. Crank Shaper, good running condition.....	275.
No. 515 Fellows Gear Shaper, with heads for cutting R. & L. Herring Bone Gears, practically new.....	2000.

This Is Only A Partial List

Machinery and Equipment

from the World's Greatest Stock!

SHEARS

6"x6"x1" Cleveland double angle shear, M 10 turntable.
 24" thrt. Cleveland single end shear.
 24" thrt. Morgan double end shear cap. 5/16"x2".
 Type R. T. Pels I Beam sh. 15" cap.
 No. 2 Bethlehem rotary shear 1/4" cap.
 20" Mackintosh hyd. bloom shear.
 14" cap. Alligator shear.
 24" Chicago alligator shear.
 5" Carlin alligator shear.
 6" United alligator shear.

GRINDERS

No. 224 Diamond roll.
 12"x36" Fitchburg plain.
 10"x48" Landis universal.
 16"x36" Landis universal.
 16"x60" Landis universal.
 16"x66" Landis universal.
 16"x68" Landis crankshaft.
 20"x54" Diamond surface.
 No. 4 Gardner disc, 20".

COLD SAWS

90" Newton cutting-off.
 62" Newton cutting-off.
 20" Newton cutting-off.

PIPE THREADING MCHS.

2" Curtis.
 6" Bignall & Keeler; 6" Saunders.
 12" Bignall & Keeler.

POWER HAMMERS

500 lb. Bradley upright; Beaudry.
 80 lb. Bradley helve.

STEAM HAMMERS

400, 600, 800, 1000, 1200, 1500 and 6000 single frame.
 2000, 2500, 4000, 6000 double frame
 Bement & Chambersburg.

TANKS

317,000 gal. steel vertical.
 72,000 gal. steel tower.

TANK CARS

7000-gallon cap. acid tank cars.
 8000-gallon cap. oil tank cars.

MOTORS

A C & D C from 1/2 h.p. up to 500 h.p.
 Induction and slip ring.

BOARD HAMMERS

400, 600, 800, 1000, 1500, 2500 and 3000
 Bliss, P. & W. & Chambersburg.

AIR COMPRESSORS (BELT)

67' Ingersoll ERI.
 58' Curtis vertical.
 92' Ingersoll ERI.
 235' Blaisdell.
 275' & 350' Gardner.
 464' Sullivan.

MISCELLANEOUS

1-ton Louden traveling crane.
 1-ton box electric hoist 40' lift.
 3-ton P. & H. monorail hoist.
 5-ton P. & H. monorail hoist.
 No. 1 Cleveland hor. I beam bender.
 3-spindle Scotch boiler drills.
 8' H. & J. mangling rolls.
 30" Lysholm plate punch table.
 20" Lysholm plate punch table.
 35"x54" Weatherston spacing table.
 8"x8"x1/2" H. & J. angle planing mch.
 H. & J. channel and bar bevel mche.
 8"x6" Shipbuilders' angle bevel mch.
 No. 35 Union Hercules embos mch.
 Nelson bolt & nut assembling mche.
 Nelson rivet & bolt sorting mche.
 6-spindle Richmond staybolt drill.
 365-ton Camden joggling press.
 Bertram boilermakers' oval punch.

FREE! 144 Page Industrial Bulletin No. H-209

HARRIS BROTHERS COMPANY
35th & Iron Sts., CHICAGO

Pittsburgh Office—1009 House Bldg., Pittsburgh, Pa.

EXCEPTIONAL TOOLS PRICES

24-26" Libby turret lathe.....	\$2650.
27"x10' American engine lathe, cone drive	1900.
10" Curtis & Curtis (Forbes) pipe machine	500.
5' Niles B. P. (Ridgeway) Radial Drill..	1700.
16"x6' Cincinnati, severe duty engine lathe	600.
36"x36"x12' Bickett planer, 1 head, belted motor drive	1300.
36" Cleveland circular saw, 12" capacity	475.
No. 4 J. N. LaPointe Broaching machine	525.

Machine Tools Sales Company

235 Commercial Trust Bldg.,

Philadelphia

After our Inventory is a good time to buy

Air compressor, 1600 cu. ft. cap.
G. E., complete with 20 h. p.
motor a. c.
Bending roll, 110" H. & W. cap.
16 gauge.
Bolt cutter, No. 3-1" Capitol
double head auto.
Boring mill, 30" Colburn vert.,
with 3-jaw combination chuck.
Boring mill, 36" Builard "New
Era" vertical, with side head
and 4 jaw chuck.
Drill, slid. hd., 36" Snyder, comp.
Drill, sensitive, No. 1 1/2 Avey 4-
spindle, h. s., b. b.
Drill, radial, 5' Drees plain.
Gear shaper, 36" Fellows.
Gear cutter, No. 5-48"x10" B.
& S. auto. (spur gears only).
Grinder, plain, 12"x36" Modern.
Grinder, surface, vertical No. 12
Pratt & Whitney.

Grinder, universal, No. 1, 10x24"
Brown & Sharpe.
Hammer, bd. drop, 1200 lb. Bliss.
Lathe, 23"x24" Schumacher &
Boye, arrgd. for motor drive.
Miller, No. 2 Clevel'd sgl. pul. dr.
Miller, No. 3 Cincinnati, vert.,
single pulley drive.
Planer, 30"x30"x8' Cleve., 2 hds.
Press, No. 512 Niagara s.s., s. b. g.
Riveter, 30-ton Hanna vert., 75"
reach, 18 gap, cap. 7/16" cold
or 1" hot rivets.
Saw metal, No. 12-B Higley.
Shaper, 24" Potter & Johnston,
with revolving table.
Shear, 8' E. & K. sq. sh'r, cap. 10 g.
Slotter, geared, 25" Niles.
Turret lathe, No. 4 W. & S.,
geared friction head.
Turret lathe, 18" Libby, sgl. pul.
dr., arrgd. for belted motor dr.

THE E. L. ESSLEY · MACHINERY · CO

551 W. Washington Blvd., Chicago.

78-80 W. Water St., Milwaukee

ReMANUFACTURED (ORIGINATED BY US)- MACHINE TOOLS

REG. U. S. PAT. OFF.

Largest stock of high grade machine tools in America. All principal makes and models. Every one guaranteed. Save 25 to 60 per cent on prices.

This is only a partial list. Write for price on any tool you need, whether listed below or not.

LATHES

- 3-14"x 6" Carroll-Jamieson.
- 1-16"x 8" Rockford.
- 1-18"x 8" American.
- 14-20"x 8" LeBlond.
- 5-20"x12" American.
- 5-20"x16" American.
- 20-21"x10" LeBlond.
- 10-24"x11" Cisco.
- 1-24"x12" Reed Prentice Grd. Hd.
- 3-24"x12" Providence.
- 1-24"x15" Chard.
- 7-25"x10" LeBlond.
- 10-25"x12" LeBlond.
- 24-26"x10" Canada.
- 10-26"x18" Bridgeford.
- 18-32"x12" Pittsburgh.
- 1-36"x36" Putnam geared head.
- 4-36"x30" Pittsburgh Geared Hd.
- 3-36"x37" Niles Bement Pond.
- 1-51"x20" LeBlond.
- 1-56"x44"x18" Johnston.
- 1-60"x18" Johnston.

MILLERS

- 5-No. 2 Kempsmith.
- 1-No. 3 Kempsmith Universal.
- 2-No. 2 Rockford.
- 1-No. 2B Rockford Universal.
- 2-No. 28 Ohio.
- 6-No. 2 B Hvy. Brown & Sharpe.
- 4-No. 3 Kempsmith.
- 9-No. 3-B Hvy. Brown & Sharpe.
- 2-No. 4 Cincinnati.
- 2-No. 4 LeBlond.
- 3-No. 4-B Becker.
- 2-No. 3 Cincinnati Vertical.
- 2-No. 4 Cincinnati Vertical.
- 4-No. 5-C Becker.
- 3-No. 6 Becker.

PLANERS

- 1-24"x24"x 6" American.
- 1-24"x24"x 6" Liberty.
- 2-36"x36"x10" Bickett.
- 1-36"x36"x12" Woodward & P.
- 3-36"x36"x18" Cincinnati.
- 3-42"x42"x10" Gray.
- 1-72"x56"x36" Cincinnati.

PRESSES

- 1-No. 34 Toledo Solid Back.
- 1-No. 69 Stoll Geared.

BORING MILLS—Vertical

- 2-24" Bullard "New Era."
- 1-42" Gisholt.
- 1-44" Niles Bement Pond.
- 1-42" King.
- 1-52" Gisholt.
- 1-54" Colburn.
- 1-60" Colburn.
- 1-60" Pittsburgh.
- 1-62" King.
- 2-72" Cincinnati.
- 7-72" Gisholt.
- 1-84" King.

BORING MILLS—Horizontal

- 1-3" Foote-Burt.
- 1-No. 0 Giddings & Lewis.
- 1-No. 1 1/2 Giddings & Lewis.
- 1-No. 3 Rochester Floor Borer.
- 1-5" Detrich & Harvey Floor Bor.

DRILL PRESSES

- 1-20" Barnes all geared.
- 2-24" Barnes all geared.
- 1-No. D-2 Colburn.
- 1-No. 24 Foote-Burt.
- 1-No. 25 Foote-Burt.
- 5-No. 310 Baker.
- 1-3-spindle Henry & Wright.

RADIAL DRILLS

- 1-5" Niles-Bement-Pond.
- 2-7" Western.
- 1-8" Western.

GRINDERS

- 3-6"x18" Landis.
- 12-10"x36" Norton.
- 3-10"x72" Norton.
- 3-12"x26" Modern.
- 11-14"x50" Norton.
- 1-18"-30"x96" Norton Gap.
- 1-20"x96" Landis.
- 1-20"x144" Landis.

Our Guarantee: Your money back if you return a machine within thirty days, freight prepaid.

HILL, CLARKE & CO. of CHICAGO,

Telephone Haymarket 7660

H12-I-RTG

115

649 W. Washington Blvd.,
CHICAGO, ILL.

Cable Address "Remand"

REAL BARGAINS

1/2" American Precision Bench Lathe, complete.....	\$ 75.
14"x6" Rockford S. Q. C. Engine Lathe.....	225.
No. 2 Kampemith Plain Miller, with c. s.....	275.
No. 1 Oesterlein Miller, with c. s.....	175.
National Hand Miller, bench type.....	40.
No. 12 Besly Disc Grinder, press and extra discs...	175.
Yoder Serpentine Shear, 60" Throat.....	125.
Combination Ripeaw, Jointer, & Boring Machine.....	165.
36" Greaves & Klusman Band Saw.....	165.
28" Silver Band Saw.....	90.
20" Champion B. G., Power Feed Drill Press.....	95.
Heald Grinder for piston rings, with magnetic chk.	65.
Small Tools of every description.	
Guaranteed Rebuilt Leather Belting, 6 1/2 cents per Inch.	

Electric Motors, All Sizes—A. C. & D. C.

- 40" Motor driven 1/2 g Blower, 3P., 60C., 220 Volts.
- 45" Motor driven 1/2 g Blower, 3P., 60C., 220 Volts.
- 15 H. P. Allis Chalmers Variable Speed Slip Ring Motor, 3P., 60C., 220 Volts, with controller.
- 7 1/2 H. P. Wagner motor, variable speed slip ring type 110 or 220 Volt Univ. Electric Drills, 3/4 cap., \$22.50.

All Our Motors Are Guaranteed

Midland Equipment Co., 612 W. Van Buren St.
CHICAGO, ILL.

FOR SALE—We have on hand the following machines which have been used less than 90 days:

- 1—No. 1B Universal Turret Lathe, with oil pan and pump, Ser. No. 223, with direct belted motor drive, 5 h. p. type Kt 732-6-5 1600 G. E. a. c. motor, 220 v., 3 ph., 60 cy., 1750 r. p. m., mfd. by Foster Machine Co., Elkhart, Ind.
- 1—3-Spindle Hole Hog Horizontal Boring Machine, with 48"x35 1/4" table, mfd. by Moline Tool Co., Moline, Ill. Ser. No. 2038.
- 1—Type 30 Vert. Multiple Spdl. Drill, with 42 spdl., pwr. fd. to hd., Ser. No. 30596, mfd. by National Automatic Tool Co., Richmond, Ind.
- 1—No. 14 Vertical Multiple Spindle Drill, with 16 spindles, power feed to head, Ser. No. 14479, with 30"x33" bed, mfd. by National Automatic Tool Co., Richmond, Ind.

WANTED—We are in the market for the following machines, either new or used, in good condition:

- 1—Thomson Electric Butt Welder for pipe ends, size 20-A-5, pipe sizes 3/4" to 2 1/2" Std. or 2" E. H.
- 1—Pipe Bending Machine, Wallace Mfg. Co. No. 5-B, for bending 180° bends from 1" to 2" pipe, bends to be made range from 4 1/2" to 15" center to center of pipe. Complete with clamping devices, with 5 h.p., 3 ph., 220-volt motor.
- 1—300 lb. Braudry Power Hammer, motor driven, or equivalent.
- 1—48"x24" Dbl. Back Geared Lathe, Pond or equivalent, motor driven.

Krueger Machinery Co., San Antonio,
TEXAS

J. J. McCabe's Used Tools

Are Always Thoroughly Inspected—

by experienced mechanics before they are shipped. Every detail is carefully checked up. You'll profit by getting *good used tools* here because that is all we sell, that is all we buy—*good ones*.

J. J. McCabe's "2-in-1" Double Spindle Lathes

Why buy two lathes when you need but one "2 in 1" that is the equivalent of two? You will pay for only one and still have a 26" or 48" Swing Lathe. We have a special one with a 14' bed that carries the same guarantee as a new one. We can ship it today.

Other "2-in-1" Lathes in Stock

26/48" swing, x12' bed.
26/48" swing x22' bed.
26/48" swing x28' bed.
24/40"x10' bed "Former Pattern."
26/44"x10' bed "Former Pattern."

New "High Duty" Lathes in Stock Double Back-Gears, Quick Change

40" Swing, 14' and 18' Beds.
36" Swing, 12' Bed.
30" Swing, 10' and 20' Beds.
24" Swing, 12', 14' and 16' Beds.
21" Swing, 8', 10' and 12' Beds.
18" Swing, 8', 10' and 12' Beds.
15" Swing, 8' Bed.

Lathes

14" sw., 6' bed, Monarch.
16" sw., 6' bed, Monarch.
15" sw., 6' bed, Sebastian.
17" sw., 8' bed, Sydney.
18" sw., 10' bed, McCabe.
24" sw., 14' bed, Prentice.
26" sw., 14' bed, Niles-Bement-P.
30" sw., 20' bed, McCabe.
42" sw., 16' bed, McCabe, geared head, quick change.
50" sw., 20' bed, Pond.
50" swing, 24' bed, Bement-Miles, triple geared.
72" sw., x40' bed, Niles-Bement-P.
80" sw., x46' bed, Putnam, mtr. drive.
110" Swing x42' Bed, Bement-Miles, 5" Blocks.

Planers

72"x72"x24' Niles, 4 Hds., belt Dr.
48"x48"x14' Pond, 2 Hds.
48"x48"x15' Seilers, 3 Heads.
26"x26"x 6' Niles, 1 Head.
16" P. & W. Planer Grinding Att.

Boring Mills

6' Niles 2 heads.
72" Gisholt 2 heads.
50" Bulard 2 heads.
48" Gisholt, 2 heads.
42" Bausch.
48" Bar Niles Horizontal.
48" Bar Bement Miles Horizontal.
28" Bar Bement Miles.

Miscellaneous Bargains

16" Str. Potter & Johnston Shaper.
18" Stroke Ohio Shaper.
20" Stroke Steptoe Shaper.
No. 2 Cinti Univ. Milling Mche.
1 1/2" Acme Bolt Cutter.
28" Espen-Lucas Cold Saw.
No. 3 Cincinnati Plain Miller.
No. 15 Bliss Press.
No. 3 Baker Keyseater.
No. 4 B. & S. Plain Miller.
24" Stroke N. B. P. Slotter.
21" Turret Lathe, Gisholt Gap.
3x36" Jones & Lamson Tur. Lathe.
No. 1 Greenfield Univ. Grinder.
2 1/2" Arm Carlton Radial Drill.
24" Rockford Drill Presses.
No. 3 Canton Portable Crane.
No. 21 1/2 Bliss Inclined Press.
42" Throat Perkins Punch.
No. 3 1/2 Greenerd Arbor Press.
50" Throat McCabe P. & S.
60" Throat Hiles & Jones Punch.
No. 2 Sounders Pipe Machine.
10" Bending Rolls.
19" Gap Riveter.
Cold Saws and Cut Off Machines.
Motors from 3 to 35 H. P.
6x6 Racine Hack Saw.
Landis Modern & Iroquois Grinders.

J. J. McCabe Lathe & Machinery Corp'n
SINGER BUILDING - - NEW YORK CITY

Specials for This Month

Guaranteed Machinery

1/2" Pratt & Whitney Screw Machine.

20" Reed Lathe.

No. 17 Crescent Buffing Lathe.

16" South Bend Lathe.

Members St. Louis Chamber of Commerce

National Machinery Mfg. Co., Inc.

3505 Page Ave., National Bldg., St. Louis, Mo.

\$\$ Reduced Prices \$\$ Used Machine Tools

RADIAL AND UPRIGHT DRILLS:

Leland Single Spindle B. B.

2' Mueller Plain Radial.

26" Barnes 3-Spindle Gang; 2 1/2' Gang Radial.

3' Bickford Plain Radial.

3' Hilbert Plain Radial.

5' Niles Universal; 6' Niles Universal Radial.

No. 11 Pratt & Whitney Multiple Spindle.

No. 25 Foote-Burt Heavy Duty.

TURRET AND SCREW MACHINES:

No. 2 Warner & Swasey Wire Feed.

No. 2 Brown & Sharpe Automatic.

No. 2 Leisley-Patton Plain Head.

72-1/4" National Acme Full Automatic.

3" Jones & Lamson Geared Head.

18" Acme Plain Head. 24" Gisholt.

26"x10' Springfield Universal Turret.

1 1/2" and 2" Cleveland Automatics.

8"x4 1/2" and 1"x15" Pratt & Whitney Hand.

THE E. A. KINSEY CO., 335 West **CINCINNATI, O.**
Fourth Street,

BRANCHES: INDIANAPOLIS, IND., HAMILTON, OHIO, DAYTON, OHIO,
LOUISVILLE, KY., COLUMBUS, OHIO

PUNCH PRESSES Immediate Shipment Excellent Condition

No. 169 $\frac{1}{4}$ Toledo Toggle Drawing Press, tie rod frame, stroke of plunger 26", stroke outer slide 14".

No. 58 $\frac{1}{2}$ Toledo straight side tie rod frame, double geared 14" stroke.

No. 104 Consolidated Double Crank.

No. 3 American Can, double crank, 30" between uprights.

No. 18 Bliss Inclinal (four).

No. 13 Niagara Horn Press with table.

No. 31 Toledo Solid Back.

OTHER MACHINES (Partial List)

8— $\frac{5}{8}$ "- $\frac{7}{8}$ " Cleveland Model A Screw Mchs., high serial Nos.

2" Cleveland Model A Auto. Screw Machine, Serial 26302.

16"x48" Landis Crank Pin Grinder, self contained.

No. 2 Landis Universal Grinder, nearly new.

No. 6 Becker Vertical Miller, 60" table feed.

No. 6 Fellows Gear Shaper.

No. 3 Kempsmith Plain Miller, excellent condition.

No. 3 Pratt & Whitney Die Sinker.

36" Niles Vertical Boring Mill, 2 heads.

42" Bullard Vertical Boring Mill, motor drive.

20"x10" American Quick Change Geared Head Lathe.

18"x8" Lodge & Shipley Geared Head Lathe.

24" Kelly Back Geared Crank Shaper.

No. 3 Warner & Swasey Fox Lathe, chasing bar.

No. 119 Bliss Screw Cap Thread Rolling Machine.

No. 2 Wells Auto. Wire Straightener, cap. No. 9 Wire.

No. 10 Waterbury-Farrell Thread Roller.

No. 5 Etna Swedging Machines, 2 $\frac{1}{2}$ " cap.

**24" and 36" Bullard Vertical Turret Lathes,
excellent condition.**

A. D. White Machinery Co.

108-114 N. Jefferson St.,

CHICAGO, ILL.

All GOOD Machinery

38½"x16½" Niles-Bement-Pond Triple Geared Lathe, quick change, with motor, A1 condition.....	\$1250.
2-30" Cincinnati-Bickford Radials, late type, first-class condition, each.....	795.
18"x96" Norton Cylindrical Grinder.....	1500.
Six spindle New Britain Automatic, 1½"x7".....	1250.
20"x10" Lodge & Shipley Quick Change Lathe, single pulley drive.....	800.
24"x14" Lodge & Shipley Lathe, quick change, three step, double back gear.....	1190.
42" Bullard Vertical Boring Mill, 2 heads.....	1250.
42"x20" Niles Triple Geared Lathe.....	1150.
48"x28" Niles Triple Geared Lathe.....	1475.
6½" Niles Full Universal Radial.....	1100.
26"x26"x6" G. A. Gray Planer.....	650.
32"x32"x12" Pond Planer.....	350.
3" Lucas Horizontal Boring Mill; No. 20 Bliss Press.	
No. 4 Verdin Punch Press; No. 6 Rockford Geared Press.	

Over 300 Other Items Of Machinery In Stock

We Solicit Your Inquiries

Norton-Broadway Machinery Co., Cincinnati, Ohio

Forging Machinery

Upsetters:

All sizes from ¾" to 5".

Bulldozers:

Williams-White, all sizes from No. 1 to No. 7.

Hammers:

Bradley Cushioned Helve, Bradley Upright Helve and Bradley Upright Strap from 30 lbs. to 500 lbs.
Steam and Board Drop.
Crank Lift Drop.

Single and Double End Punch Presses:

All capacities and depths of throat.

Shears:

Alligator and Bar Shears, capacities 1" to 6".

Threading Machines:

Single and double spindle from 1" to 3".

Miscellaneous:


Ajax Hot Saws and Burring Machines.
Mathews Marking Machine.
Alligator Shear, capacity 5" round.
Plate Shear, capacity 8"x1".

Donahue Steel Products Co.

204 N. Jefferson St.,

Chicago, Ill.

Used Milling Machines

 Send for illustrated list, with prices, of other Milling Machines, Drill Presses, Planers, Lathes, Shapers, Power Presses, Boring Mills, Bolt Machines, Grinders, Turret Lathes, etc., in our stock.

- 1—Nearly new Milwaukee No. 3B full Universal, double overarm, single pulley driven, all usual equipment.
- 1—Nearly new Brown & Sharpe No. 3A Heavy full Universal, single pulley driven, all usual equipment.
- 1—Nearly new Brown & Sharpe No. 4B Heavy Plain, single pulley driven.
- 1—Nearly new Cincinnati No. 4 hi-power Plain, all geared spindle, single pulley driven.
- 1—Nearly new Becker No. C1 Vertical.
- 1—Nearly new Becker No. B Vertical, rotary table.
- 2—Nearly new Cincinnati No. 3 Vert.

Send for Prices and Descriptions

Monarch Machinery Company
300 North Third Street, Philadelphia, Penna.

Are You Thinking—

Of installing a Radial Drill? If so, the following machines are REAL bargains:

- 1—2½' Standard type, heavy duty, MUELLER radial drill, gear drive.
- 1—3' Standard type, heavy duty, MUELLER radial drill, gear drive.
- 1—4' Standard type, heavy duty, MUELLER radial drill, gear drive.

Prices will arouse interest

Write and Satisfy yourself

The Mueller Machine Tool Company

Radial Drills and Lathes

ESTABLISHED 1902

CINCINNATI, O.

POWER PRESSES

EXCLUSIVELY

TOGGLE PRESSES

- 3—No. 1½ Bliss, Friction Clutch.
- 1—No. 4A Bliss, F. C. Tie Rod.

STRAIGHT SIDE PRESSES

- 3—No. 55 Toledo, geared.
- 3—No. 55½ Toledo, geared.
- 2—No. D201 Ferracute.

EMBOSSING PRESSES

- 3—No. 666 Toledo, 1000 tons.
- 2—No. EG 54 Ferracute, 400 tons.
- 1—No. 5 Howard, 75 tons.

ADJUSTABLE BED PRESSES

- 5—No. 2A, 3—No. 3A Bliss.
- 6—No. 83 Consolidated.
- Nos. 41, 42, 43 & 44 Toledo.

DOUBLE CRANK PRESSES

- 4—No. 9A Z. & H. Tie Rod, 37" between uprights.
- 3—No. SG 52 Ferracute, geared, 40" between uprights.
- 1—No. 95¾ Bliss, geared 42½" between uprights.
- 1—No. S31 Ferracute, 33¾" between uprights.
- 1—No. SG79 Ferracute, geared, 100" between uprights.
- 1—No. 2 Bliss, 28" bet. uprights.
- 2—No. 202A & 202B Toledo, Gap.

Over 1200 Presses in Stock

New Catalogue issued this month; write for it

Joseph HYMAN & Sons

Richmond St. and Erie Ave.,

Philadelphia, Pa.

MILLING MACHINES

No. 4 R. K. LeBlond univ., cone pul.
No. 3 Cinti. standard univ., sgl. pul.
No. 3 A B. & S. univ., sgl. pulley.
24"x14" Schumacher-Boye, standard change.
21"x10" Walcott, quick change.
No. 3 Kempsmith plain cone pulley.

No. 2 Cinti. high pwr. pl., sgl. pul.
No. 2-B B. & S. pl., single pulley.
No. 2 Cinti. plain, cone pulley.
No. 0 Cincinnati plain cone pulley.
Becker large hand miller.
28" Cinti. duplex, semi-automatic.
No. 22 Garvin vertical cone pulley.

LATHES

30"x24" Niles, with motor.
36"x22" Putnam, tri. g., semi q. c. g.
30"x16" Houston Stanwood & G., q. c.
30"x12" R. K. LeBlond, qck. chg.
30"x12" American standard change.
24"x14" Schumacher-Boye, standard change.
24"x10" Walcott, quick change.
22"x10" Hamilton, semi-quick chg.

20"x10" Bradford, standard change.
18"x10" Greaves & Klusman, q. c.
18"x 8" Chard, q. c., with taper.
18"x 8" Lodge & Shipley, q. c. g.
16"x 8" Hendey, q. c., with taper.
16"x 8" Hamilton, q. c.
14"x 8" Hamilton tool room q. c., taper, relieving and collet att.
14"x 8" Monarch.

TURRET LATHES & SCREW MACHINES

3x36 Jones & Lamson flat turret.
No. 4 Millholland turret screw machine, power feed.
No. 4 B. & S. turret screw machine.

No. 24 S. G. Garvin turret screw machine, new.
No. 1 S. P. Garvin turret screw machine, new.

GRINDERS

14" P. & W. vertical surface, with magnetic chuck.
No. 60 Heald cyl., complete equip.
6"x32" Norton plain cylindrical.
6"x15" Fitchburg plain cylindrical.

No. 2 B. & S. univ. cylindrical.
No. 1 B. & S. univ. cylindrical.
No. 2 Ohio univ. tool & cutter.
No. 1 1/2 Cinti univ. tool & cutter.

GEAR CUTTERS

No. 4 48" B. & S. auto., spur.
26" Cincinnati auto., spur.
24" Gould & Eberhardt Automatic Spur Gear Cutter.

18" Gould & Eberhardt Gr. Hobber.
No. 12 Brown & Sharpe auto. spur & bevel.
No. 12 Barber-Colman gear hobber.

DRILLING MACHINES

5" Niles semi-univ. radial, arranged for motor drive, no motor.
5" American plain radial.
3 1/2" Fossdick plain radial, b. d.
26" Prentice upright, gear box drive.
24" Cinti-Bickford upright, gear box drive and tapping.
24" Milwaukee upright.

24" Rockford upright.
23" Rockford upright, with tapping.
20" Kern upright, with tapping.
3-sp. Demco h. s., b. b. sensitive.
2-sp. Kokomo h. s., b. b., sensitive.
2-spindle Henry & Wright high speed, b. b., power feed.
Sipp high spd. ball bearing q. c. sens.

SHAPERS AND PLANERS

28" Columbia, Back Geared Crank.
20" Smith & Mills, Back Geared.
20" American b. g. crank.
16" Smith & Mills plain crank.
16" Kelley plain crank.
15" Potter & Johnson universal.
42"x36"x10" American planer, 1 hd.

38"x38"x18" Niles dbl. housing planer, 2 heads on each rail, d. c., motor driven, with motor.
30"x30"x8" Cinti planer, belt dr., 1 hd.
30"x30"x8" G. A. Gray, planer belt drive, 1 head.

MISCELLANEOUS

Bolt threader, 1" National, with diehd.
Bolt threader, 1/2" Acme dbl. spindle.
Broaching machine, No. 3 J. N. La-Pointe, late type, fric. pulley dr.
Die slotter, Garvin rotary table.
Hand brake, 8" J. M. Robinson, cast iron, 18 ga. and lighter.

Electric spot welder, Federal Jr. Keyseater, No. 2 Davis, cap. 1/2".
Keyseater, No. 3 Baker Bros., belt dr.
Pipe machine, 4" Bignall & Keeler, power.
Power press, No. 6 Niagara o. b. i.
Power press, No. 4 Toledo o. b. i.

And Many Others. Send For Our Complete List.

EASTERN MACHINERY CO.

No. 408 East Pearl St.,

Cincinnati, Ohio

Good Used Tools

LELAND-GIFFORD Single Spindle Bench Type
High Speed Ball Bearing Drill Press.

LELAND-GIFFORD Two Spindle Bench Type
High Speed Ball Bearing Drill Press.

16" STEPTOE B. G. Crank Shaper, single pulley dr.

20" CINCINNATI B. G. Crank Shaper, cone drive.

No. 2 BROWN & SHARPE Surface Grinder, with
magnetic chuck.

2½" MUELLER Radial Drill Press, constant speed
motor drive and with motor.

5" FOSDICK Full Universal Radial Drill Press.

Stocker-Rumely-Wachs Co.

117 N. Jefferson St.,

Chicago, Ill.

Surplus Machine Tools—Rebuilt

CRANE—	10' & 12' span with 2 & 3 ton hoists, comp. (will quote).	
DRILLS—	24" Cincinnati cone drive upright.....	\$ 150.
	14" Sensitive \$30; 15" sensitive.....	40.
GRINDERS—	14"x72" Queen City plain cylindrical.....	1500.
	8" or 10"x30" Queen City plain cylindrical.....	1000.
LATHES—	20"x10" LeBlond, cone and belt shifter.....	650.
	18"x 8" LeBlond, cone and belt shifter.....	500.
	14"x 6" LeBlond, cone and belt shifter.....	275.
	3"x36" Jones & Lamson bar machine.....	700.
	3"x36" Jones & Lamson chucking machine.....	650.
	2¼"x24" Jones & Lamson chucking machine.....	550.
MILLERS—	No. 3 S. P. D. LeBlond, plain, & vertical att....	1000.
	No. 2 Cone LeBlond, plain.....	510.
	10" Universal, dividing head, LeBlond.....	100.
PLANERS—	32"x32"x16" Gray (2 rail heads).....	2500.
	30"x30"x16" American (2 rail heads).....	2000.
	26"x26"x12" Whit-Blais (2 rail heads).....	1400.
	Numerous small tools and other equipment for manufacturing and jobbing shop.	
	Various sizes Queen City back geared Crank Shapers and plain Cylinder Grinders	

Queen City Machine Tool Co., 1401 Sycamore St.
Cincinnati, Ohio

Standard Steel Car Co.

Offers For Sale

Boiler and Tank Shop Equipment

We offer the following desirable Equipment for sale. All set up in our Hammond, Indiana, Plant—in good running order and prices considerably under present replacement values:

- 1—Southwark Hydraulic Riveter, 23' Gap.
- 1—Wood Hydraulic Riveter, 21' Gap.
- 1—Chambersburg Hydraulic Riveter, 48" Gap.
- 1—No. 2 Lennox Bevel Shear.
- 1—16' Covington Plate Planer, 1½" Capacity.
- 1—Beatty Horizontal Punch, 16" Throat, 1¼"x1".
- 2—20' Cleveland Wall Radial Drills.
- 1—Bellevue Furnace, 24"x60"x18".
- 2—Strong, Carlisle & Hammond Furnaces, 36"x72"x18".
- 2—10 Ton Milwaukee Cranes, 22' 6" Span, 250 volt D. C. Motors.
- 1—3 Ton Pawling & Harnischfeger Crane, 29' Span, 220 Volt A. C. Motors.
- 1—3 Ton Pawling & Harnischfeger Crane, 37' Span, 220 Volt A. C. Motors.

Parties desiring to make inspection are directed to call on Mr. E. Eiselt, Manager of Works, Standard Steel Car Company, Hammond Works, Hammond, Indiana.

All communications relative to complete descriptions and prices, should be directed to our agents,

Reliance Machinery Sales Company
1407-9 Brighton Road, **PITTSBURGH, PA.**

SLIGHTLY USED
BUT
EQUAL TO NEW

36" Gould & Eberhardt Spur and
Bevel Gear Cutter.

No. 12 NATCO Multi - Driller, with
10"x16" head, bored for
twelve, equipped with seven
1" and one 1¼" spindles,
tapping attachment.

10"x72" Norton Plain Cylindrical
Grinder.

No. 1½ Cincinnati Plain Cone Type
Milling Machine.

Marshall & Huschart Machinery Co.

**17 South Jefferson Street,
CHICAGO, ILL.**

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- Automatics**
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- Band Saw Machines, for Metal**
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Porter-Cable Machine Co., Syracuse, N. Y.
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- Boring Bars, Cylinder**
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Avey Drilling Machine Co., Cincinnati
Morris Machine Tool Co., Cincinnati, O.
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Abbott Ball Co., Elmwood, Conn.
- Bushings, Drill Jig**
Ex-Cell-O Tool & Mfg. Co., Detroit, Mich.
- Case-Hardening Compound**
Kasenit Company, 2 & 4 Stone St., New York
- Chucking Machines**
New Britain Mch. Co., New Britain, Conn.
- Chucks, Collet**
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- Chucks, Drill**
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- Chucks, Drill and Tap**
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- Chucks, Keyway Cutting**
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- Chucks, Wrenchless**
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- Clutches, Friction**
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Bignall & Keeler Mch. Wks., Edwardsville, Ill.
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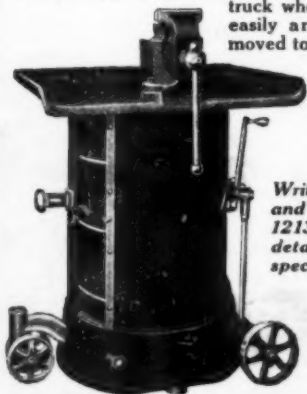
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